SD Times
SOFTWARE DEVELOPMENT
The Industry Newspaper for Software Development Managers

APRIL 15, 2004
100th ISSUE

Novell Backs Up Open-Source Promise 5
Sun Sets Road Map For Development tools 5
Embarcadero Adds Analyzer to Rapid SQL 5
Incodea's Business Pilot 4.0 Goes With the Flow 6
Microsoft Launches MapPoint Location Server ..8
Remedy Takes Action To Improve Business Processes 10
Niku Brings Clarity To Project Management ...10
IBM Goes Back to the Future With Aspect Orientation ...12
Microsoft's InfoPath 2003 Service Pack Out 12
JNet Direct's JSQLMapper Ties SQL to XML 16
Macromedia Ships Flex Framework 17
New IBM alphaWorks Technology Seeks to Raise Software Quality 22
I-Logix Thinking Outside The (UML) Box 25
MontaVista's New Tools Get Developers on Boards .25

A BZ MEDIA PUBLICATION $7.95
www.sdtimes.com

TESTING 101: AWOL ON THE COLLEGE CAMPUS

BY EDWARD J. CORREIA

Despite its importance in the software development life cycle, testing is included in only a handful of college and university computer science curricula, industry experts indicate.

Theresa Lanowitz, research director at Gartner Inc., said that colleges do not emphasize software quality through testing. "The myth is that if you're not coding, you're not working," she said, referring to what she said is a perception common on college and company campuses. "People tend to think that if they're going to learn something in computer science, it's going to be around language development and construction."

Robin Goldsmith, president of Go Pro Management Inc., has made a living on this gap. His consulting and development training company offers courses on testing, requirements definition, project management and outsourcing.

Goldsmith believes that college curricula place too strong an emphasis on people and project management skills at the expense of vital QA techniques. "There's a notion that a project manager should not be directing attention to hands-on skills associated with testing, requirement analysis and design because if they are busy doing that, they are not doing project

▸ continued on page 15

IBM to Sun: Open J2SE As a Start

Despite McNealy's negative reaction, analysts want Sun to define Java role

BY JENNIFER DEJONG

Following its late February open letter asking Sun Microsystems Inc. to consider open-sourcing Java, IBM Corp. last month articulated what it sees as a first step in making that happen: releasing Java Standard Edition (J2SE) and its associated libraries to the open-source community.

"These parts of Java are well known and very stable," said Rod Smith, vice president of emerging technologies for IBM's software group. "We think that is a good starting point."

IBM understands open-source communities, says Smith.

On March 19, Smith said he and Sun's chief engineer, Rob Gingell, were engaged in ongoing, informal discussions regarding IBM's proposal, and he characterized Gingell's response as "positive." Gingell declined requests for an interview, but a Sun spokesperson said mutually respectful discussions were taking place between Gingell and Smith.

Sun did not respond to requests for interviews with other Sun executives. But according to a March 24 published report, Sun CEO Scott McNealy indicated during a news conference at the 2004 FOSE conference, held in late March in Washington, D.C., that the company will not open-source Java anytime soon. According to the report, McNealy said, "We're trying to understand what problem [open-sourcing Java solves]

▸ continued on page 20

Pervasive Wants to Be Just That

Repackages Data Junction technology to broaden its reach

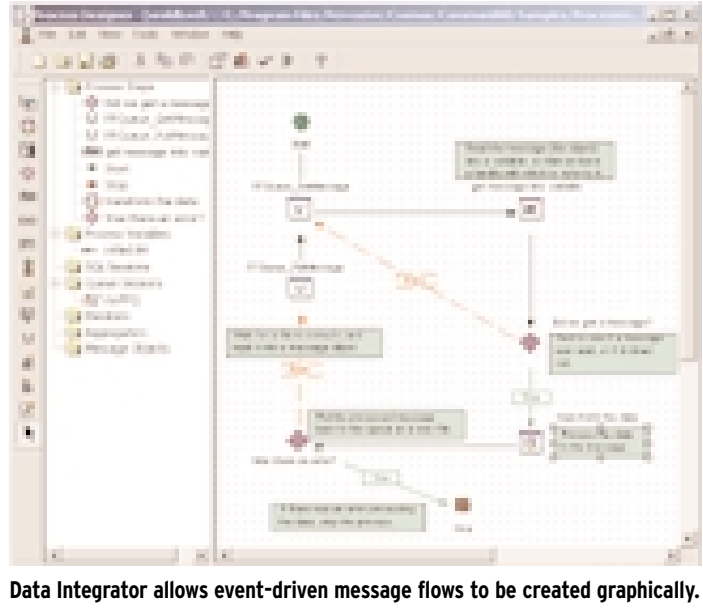
BY DAVID RUBINSTEIN

In an attempt to keep the Data Junction brand associated with low-cost tools for midmarket companies while leveraging its own name for broader solutions that use the acquired technology, Pervasive Software Inc. on April 5 released three new tools for data integration.

Data Junction Migration Toolkit, Pervasive Data Integrator and Pervasive Business Integrator are designed to span from simple, repetitive extract-transform-load (ETL) functions up to real-time message-oriented integration, according to Mike Hoskins, Pervasive's vice president and general manager of the integration products division.

Hoskins had been CEO of Data Junction before it was acquired by Pervasive late last year for US$52 million in cash and stock. In the 100 days since the transaction closed, Hoskins said all but one of the 112 former Data Junction employees joined the Austin,

▸ continued on page 18



Data Integrator allows event-driven message flows to be created graphically.

SPEECH! MICROSOFT LAUNCHES NEW SERVER

BY JENNIFER DEJONG AND ALAN ZEICHICK

SAN FRANCISCO — As anticipated, Microsoft Corp. launched Speech Server 2004 at the combined VSLive, Microsoft Mobile Developer Conference and Avios SpeechTEK events held here last month.

Speech Server 2004, the newest member of the Windows Systems Server family, combines speech-processing services and telephony capabilities with Visual Studio .NET, making it easy for developers to create voice-enabled, customer self-service applications, without having to master the intricacies of speech technologies, said James Mastan,

▸ continued on page 22

© 2004 Microsoft Corporation. All rights reserved. Microsoft, the MS logo, Visual Studio, the Visual Studio logo, and "Your potential. Our passion." are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

Microsoft
Your potential. Our passion.™

Expand that thought.

Visual Studio .NET 2003 can cut development time by two-thirds, giving you more time to think.

Got a big idea? Visual Studio® .NET 2003 delivers higher productivity, helping you turn that big idea into reality faster than you ever thought possible. Want proof? Visual Studio .NET enabled Xerox Global Services to bring the v2.0 release of its CentreWare Web software to market in one-third the time compared to their previous development platform. To find out how Visual Studio .NET 2003 can help you quickly turn your big ideas into reality, visit msdn.microsoft.com/visual/think

Microsoft® Visual Studio®

A development team isn't a team till you make them one.

Borland® StarTeam® configuration and change management system. Centralize all your project assets, and get a better grip on things. Standardize change request generation and management, including automatic links to the relevant file revisions. Flag defects and put suggestions right alongside code. Enforce version approval without jerking people around. StarTeam synchronizes distributed and heterogeneous teams — and gets everyone pulling together.

Web-based architecture for total access • Powerful object linking for files, change requests, tasks, and topics • Synchronize with existing Microsoft® Project plans re: assignments, status, and effort expended • Eliminate lost code by rolling back to any labeled configuration or point in time • Server-based data security using industry-standard RSA encryption • Solid integrations with all leading IDEs including products from Borland, IBM, and Microsoft • Interoperability with Merant® PVCS® Version Manager™ and Microsoft® Visual SourceSafe® archives

go.borland.com/st1

Made in Borland® Copyright © 2004 Borland Software Corporation. All rights reserved. All Borland brand and product names are trademarks or registered trademarks of Borland Software Corporation in the United States and other countries. All other marks are the property of their respective owners. • 21682.1

Borland®
Excellence Endures™

Novell is contributing more than it's taking away, according to Messman.

Novell Backs Up Open-Source Promise

Puts NetWare, Linux kernels in new Open Enterprise Server

BY YVONNE L. LEE

Novell Inc. punctuated its commitment to open-source software at its annual Brainshare conference in late March by releasing its YaST configuration tool and iFolder remote document management software under the GNU General Public License (GPL) and by announcing plans to release a Linux and NetWare bridge product a year ahead of schedule.

"You can see from what we are announcing that we're contributing more than we're taking away, and that's important to the open-source community," said Novell chairman and CEO Jack Messman.

"I think that Novell is walking the walk," said John Weathersby, chairman of the Open Source Software Institute, a nonprofit organization that promotes open-source software in government and education. "I think everything I've seen so far has been consistent. It's great to see a company recognize the value of open-source components and patch together a strategy."

Despite claiming that the bridge product, Open Enterprise Server, was ahead of schedule, Messman declined to give specifics on it, including pricing, delivery date and which networking elements it would include. Open Enterprise Server is designed to combine the networking capabilities of NetWare and SUSE Linux and Ximian. Messman would say only that it would ship "later this year."

Although Open Enterprise Server will be a bridge between Linux and NetWare, the company plans to maintain the two separate operating systems, he said.

The Provo, Utah, company also announced that it had released two products into open source under the GPL license, with Novell maintaining the copyrights to those programs. YaST is a SUSE Linux configuration management tool, but Messman said he believed that other companies would be able to use it to add configuration management for their products.

He described the iFolder product as offering "follow-me filing," through which users could back up, access and manage files remotely. Users save files locally, and iFolder automatically copies and updates the files to any other machines the user designates.

The iFolder project will be hosted at forge.novell.com, and will consist of three branches: the product's synchronization engine and data store, called Simias, an address book and the iFolder application, which uses Simias and the address book.

iFolder is being developed using the Mono framework, a community project now sponsored by Novell to develop an open-source version of the Microsoft .NET development platform. ▮

Sun Sets Road Map for Development Tools

Releases Java Studio Enterprise, Creator, compilers; NetBeans, Mobility kit on way

BY YVONNE L. LEE

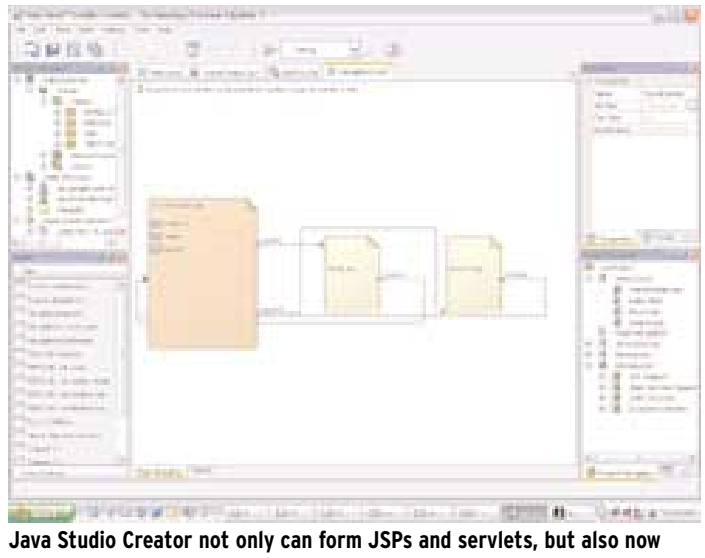
Sun Microsystems Inc. in March firmed up its plans for the release of a number of its developer products. The company began shipping its Sun Java Studio Enterprise development tool and its Sun Studio 8 compilers late last month. It also released its Sun Java Studio Creator into beta testing. In addition, the company announced that the Java Studio Mobility toolkit for mobile applications will be released in May, and that NetBeans 4.0, an update to its open-source IDE, would be released in August.

Sun Java Studio Enterprise is the full platform of tools Sun rebranded in September, said Joe Keller vice president of marketing for Java Web services. It includes Sun's Java IDE, J2EE tools and wizards, Web service creation and assembly tools, portal channel builder, integration connector builder, and one-button deploy tools for application and Web servers. Java Studio Enterprise also includes Sun's application server, Web server, integration server and portal server.

It is priced at US$5 per employee per year on top of a Java Enterprise System subscription, which is $100 per employee, or free for organizations with fewer than 100 employees. The stand-alone price without the JES subscription is $1,895, plus $1,395 per year maintenance.

Sun Java Studio Creator, formerly known as "Project Rave," is a NetBeans-based graphical tool for creating JavaServer Pages and servlets that Sun is marketing toward business developers with a lower level of technical expertise than those who use its Sun Studio Enterprise suite of products.

A future version will ease the creation of full J2EE applications, said Jeff Anders, group marketing manager at Sun.



Java Studio Creator not only can form JSPs and servlets, but also now builds the navigation between pages.

"The initial release will be for really creating two-tier or three-tier Web applications, where you're creating JSPs and servlets, but then also connecting to a database," he said. "The full road map coming midyear will have full J2EE support for true *n*-tier applications."

Since the early access program for Project Rave, Sun has made minor changes to the interface and has made possible page sequencing for not only graphically building links between pages, but also connecting to the various pages from within the development tool, Anders said.

The Sun Java Studio Creator early access version is available at wwws.sun.com/software/products/jscreator and runs on Linux, Mac OS X, Solaris and Windows.

STUDIO COMPILERS SHIPPING

New features in the Sun Studio 8 C, C++ and Fortran compilers for Solaris on SPARC and Intel platforms include precompiled headers, the ability to store more information in object files and local thread storage.

Sun Studio 8 is available now for $2,995 per developer. ▮

EMBARCADERO ADDS ANALYZER TO RAPID SQL

BY DAVID RUBINSTEIN

The forthcoming update to Rapid SQL, a database coding and testing tool from Embarcadero Technologies Inc., incorporates a code analyzer that will help find bottlenecks quickly. According to the company, Rapid SQL 7.3 began beta testing on April 1.

Developers can run their stored procedures against the tool to find out which procedures are taking the biggest percentage of the application's response time, said Robin Schumacher, vice president of product management for the San Francisco-based company. Once the procedure is singled out, a drill-down capability enables the tool to identify poorly written constructs or SQL code, he explained.

The tool will target the MySQL database later this year; it already works with IBM's DB2, Microsoft's SQL Server, Oracle 10g and Sybase database management systems.

Also later this year, the company will release version 6.5 of its ER/Studio database application modeler; the update will include an advanced metadata exchange that will allow application architects to import models from other tools, Schumacher added.

"There is a trend toward data growth, and companies are handling all this information with a minimal staff," Schumacher said. One of the company's customers uses 15 people to manage 700 databases, he claimed. "The data volume managed by each DBA doubles every 2.4 years." ▮

Incodea Goes With the Flow, Changes From Swing to SWT

Expects to support Eclipse soon in workflow tool

BY DAVID RUBINSTEIN

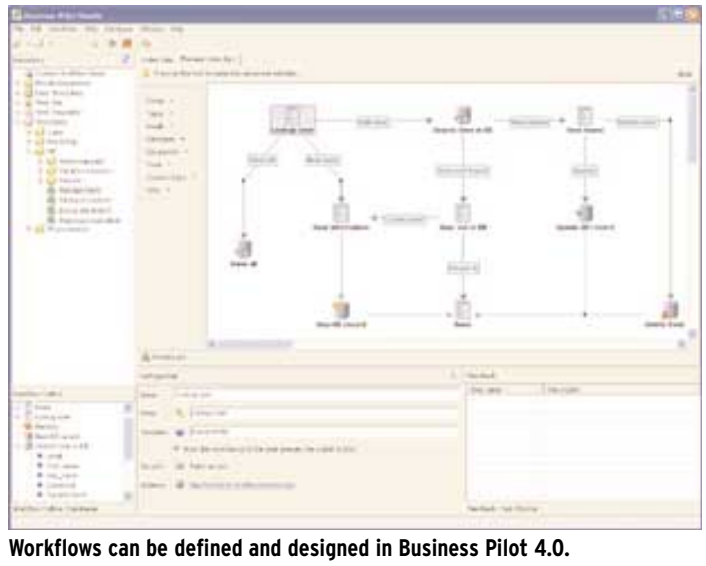
Florida-based start-up Incodea Corp. on April 5 released Business Pilot 4.0, an updated version of its workflow designer and repository aimed at small and midsized businesses.

Business Pilot is a J2EE-compliant framework for developing workflows by writing in Java or by combining prepackaged workflow elements such as database queries or task assignments, according to Michael Privat, founder of Incodea. "The load can be shared by business and IT people," Privat said. "Business people can create the workflow and IT can implement it, and now there's a common communication platform to do that on."

Privat said the Studio graphical workflow designer within Business Pilot 4.0 has been changed from Swing to SWT. "Swing is not real user-friendly, and the widget set looks different," he said. "With the SWT API, the widgets are more complete." Business Pilot Studio, Privat added, also can be used to design Web forms that touch off workflows, and is useful for designing contracts. "It can find a tag on a Web site and replace it with new content from the workflow," he explained, using as an example a new piece of content that when submitted, automatically goes in for approval, and then if approved is posted to a Web site.

The Business Pilot server requires a JDBC-compatible database to act as the repository and has been tested on the JBoss open-source server, Privat said. It will support the Eclipse application framework "when their API settles down," he said. Privat expects version 3.0 of Eclipse to come out around June and said a plug-in implementation should follow soon after.

Business Pilot 4.0 costs US$5,000 per server processor; there is no charge for the Studio tool. The company also offers a hosted solution that is priced beginning at $25 per month and could go to $125 per month depending upon the level of service and features required. ■



Workflows can be defined and designed in Business Pilot 4.0.

Actional Unleashes Watchdogs

BY YVONNE L. LEE

Actional Corp. in March introduced new capabilities called Watchdogs in its Looking Glass product to monitor sporadically used Web services. Watchdogs are designed to check proactively for potential service failures by sending messages during periods of inactivity, according to chief technology officer Dan Foody.

"One of the features of Looking Glass is to show you how the service is behaving from the perspective of the consumer," Foody said. "Watchdogs solve two additional challenges. One challenge is for when you don't have anything going on. If there's nothing going on, there's nothing to measure, so you don't know if the service is up or down." It also can check to see whether the application is performing as expected, he said.

Watchdogs mimic the behavior of a service user to verify that the service is up and that it gives the expected response, Foody said. If a service goes offline or its performance degrades, the software notifies operators so they can respond.

The Watchdogs can be placed around the network to not only simulate user behavior, but also measure the Web service's response time, Foody said.

Watchdogs are now shipping with version 5.0 of Looking Glass for Microsoft, which starts at US$100,000. They are currently available for .NET and are due for J2EE environments by June. ■

End-users and ISV's rely on WorkPoint™ for BPM

Whether you're a leading IT solutions provider looking to embed a workflow engine, or a medium sized business needing to automate internal business processes, look to WorkPoint for a flexible BPM solution.

PinkRoccade and South & Associates turned to WorkPoint by Insession Technologies for a flexible BPM product that fit their unique requirements.

A leader in the Netherlands outsourcing market, PinkRoccade required a BPM/workflow solution with an open architecture to be able to support their diverse client base.

South & Associates, P.C. law firm services over 150 clients and thousands of foreclosures each year, amidst tight government regulations. WorkPoint offered the flexibility and architecture their complicated internal business processes demanded.

Whether you need an in-house BPM/workflow solution, or need to embed that functionality for your customers, depend on WorkPoint to meet your complex needs.

Read the full story at www.insession.com/bpm or contact iej@insession.com for more information.

Insession technologies

A Division of Transaction Systems Architects
Offices Worldwide • www.insession.com • 800.755.1596

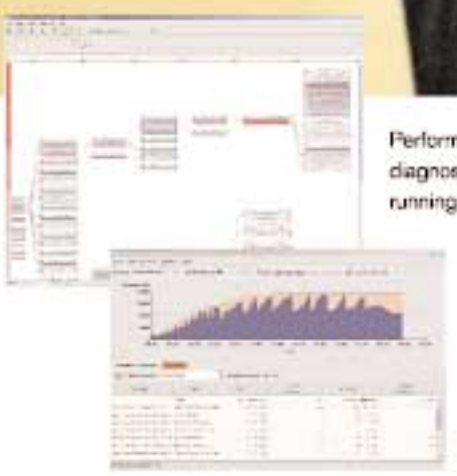
Our technical expectations were met in WorkPoint...We are very pleased with our licensing of WorkPoint and our relationship with Insession Technologies.

Mr. Diego Baptista
Software Engineering Specialist
PinkRoccade

Insession and South formed a great team.

Mr. Perry White
Director of Information Technology
South & Associates, P.C.

WorkPoint



PerformaSure – a system-wide performance diagnostic tool for multi-tiered J2EE applications running in test or production environments.

JProbe – a performance tuning toolkit for Java developers.

Join The Thousands of Companies Improving Java Application Performance with Quest Software.

Whether it's a memory leak or other performance issues, Quest Software's award-winning Java products — including JProbe® and PerformaSure™ — help you spend less time trouble-shooting and more time on the things that matter. Quest's Java tools will identify and diagnose a problem all the way down to the line of code, so you no longer have to waste time pointing fingers or guessing where the problem lies. Maximize your team's productivity with Quest Software by downloading a free eval today from **http://www.quest.com/sdtimes.**

QUEST SOFTWARE®

© 2004 Quest Software Inc., Irvine, CA 92618 Tel: 949.754.8000 Fax: 949.754.8999

Microsoft Launches MapPoint Location Server

Gives developers the ability to add real-time location information to enterprise applications

BY JENNIFER DEJONG

In an effort to increase enterprise adoption of its mapping technology, Microsoft Corp. announced last month MapPoint Location Server (MLS), an extension of the MapPoint Web Service the company debuted in April 2002 that enables developers to incorporate real-time location data from cell phones into applications.

By linking to mobile network operators, MLS returns the longitude and latitude coordinate at which each phone is located, allowing companies to manage field employees more effectively. For example, a broadcast news agency arms its drivers with cell phones. "When news breaks, you pull up a map of where your drivers are, dispatching the truck that is closest," said Microsoft's MapPoint technical evangelist, Steve Lombardi.

"MLS is a stand-alone server, which you install and program against, just as you would with SQL Server," explained Lombardi. It lets developers add location data to existing applications, such as CRM or sales. The MapPoint Web Service merely allowed developers to add generic location data, such as a map with store locations, to enterprise applications.

In addition to the .NET programming languages, MLS applications can be developed in non-Microsoft languages, such as Java or Perl, without requiring the developer to custom-code geographic information system (GIS) or mapping knowledge. But MLS requires Microsoft SQL Server to store contact management and other data and relies on Windows Active Directory to authenticate users, said Lombardi.

MLS currently offers plug-ins for mobile operators Sprint, in the U.S., and Bell Mobility, in Canada. Lombardi said Microsoft suggests companies that use real-time location data address privacy issues by publishing policies that stipulate when they are monitoring employees and for what purpose the information is being used. "Employees must know when they are being tracked," he said.

MLS lets cell-phone users enforce privacy preferences. "For instance, drivers can agree to specify where they are located from 9 to 5," said Lombardi. But they do not need to broadcast their location after business hours. In addition, they can request an MLS alert, via e-mail or Short Message Service, each time their location is tracked.

To ensure privacy, all location information or personal information, such as the mobile phone number, is encrypted when passed from MLS to the MapPoint Web Service or to the mobile operator, said Lombardi.

MLS costs US$8,000 per server. In addition, it requires a service access license for each device, at $1 per device, per month. Pricing does not include wireless network operator fees. ■

OPENINSIGHT
Database Development

Using Revelation Software's flagship products OpenInsight and Java for OpenInsight (JOI) are truly safe bets! OpenInsight is *the application developer's toolkit*. It has its own development environment and database, including a Form Designer, Editor, User Interface Workspace, Reporting Tools, built-in Web and XML functionality, plus much, much more.

If you need a robust, secure environment to develop applications on a Linux or Windows platform, then you need the power of Revelation Software.

Download a free 30-Day Evaluation Copy of OpenInsight or JOI today. It'll be like hitting the jackpot.

For more information about OpenInsight, our Solution Partner Program, or OpenInsight training classes at Revelation Headquarters or one of our Authorized Training Centers (ATCs), go to www.revelation.com/sdt/sdthome or give us a call at 800-262-4747

Join us at the Revelation Software User's Conference in New Orleans, Louisiana, June 24-26, 2004. Bring this ad for a free gift. Go to www.revelationconference.com for more details.

Revelation Offices – Global

Revelation Software, Inc.
Corporate Headquarters
99 Kinderkamack Road, 1st Floor
Westwood, NJ 07675
Toll Free: (800) 262-4747
Phone: (201) 594-1422
Fax: (201) 722-9815
Email: info@revelation.com
Web: www.revelation.com

Revelation Software Ltd.
Northumberland House
11 The Pavement
Popes Lane, Ealing
London, W5 4NG, UK
Phone: +44(0)208 832 7380
Fax: +44(0)208 832 7381
Email: info@revsoft.co.uk
Web: www.revsoft.co.uk

Revelation Software Australia Pty Ltd.
Unit 2
21 Old Pittwater Rd
Brookvale, NSW 2100
Australia
Phone: +61-2-9939-6399
Fax: +61-2-9939-6366
Email: info@revelationsoftware.com.au
Web: www.revelationsoftware.com.au

REVELATION SOFTWARE

Revelation Software is a division of Revelation Technologies, Inc. OpenInsight is a trademark of Revelation Technologies, Inc. All other brand and product names are trademarks of their respective holders.

Seapine Software™
changing the world of software development

Developers love creating code... Managers crave process control... Bridge the gap with Seapine CM.

Software development is a team effort with developers, testers, and management all working toward one goal – delivering the highest quality product on time.

Built on award-winning TestTrack Pro and Surround SCM, Seapine CM brings structure to source control and issue management, improving communication while accelerating product development.

Seapine CM helps your team...

Define custom change request workflows, putting you in control of who makes changes and who authorizes the closure of issues.

Associate source code changes with defects or change requests.

Gain a thorough understanding of how much work remains before project completion.

View complete audit trails of what changed, why, and by whom.

Understand how close you are to release—how many issues are open, how quickly are you closing them, how many are re-opened?

Features:

Complete source code control with private workspaces, automatic merging, role-based security and more.

Comprehensive defect management—track change requests, bug reports, feature requests and more.

Fast and secure remote access to your source files and defects—work from anywhere.

IDE integration with JBuilder, Visual Studio, Eclipse, and other leading development tools.

Advanced branching, triggers, email notifications, fully configurable workflows, and customizable fields put you in complete control of your process.

Open interfaces—triggers, email notifications, SOAP support, XML data exchange, and ODBC clients.

Scalable and reliable cross-platform, client/server solution supports Windows, Linux,

Successful team-based development requires the proper process supported by the right development tools. Tools that are flexible, easy to use, secure, and scalable–like Seapine CM.

Achieve major improvements in software development performance through better tool integration and process automation. Manage defects, development issues, and change requests with award-winning TestTrack Pro and gain complete control over your source code and change process with Surround SCM. Seapine's integrated change management tools are feature rich, highly scalable, Web enabled, and cross platform. Streamline your development process with Seapine CM and help your team deliver quality software products on time, every time.

Learn more about the Seapine CM suite at
www.seapine.com
or call 1-888-683-6456

Surround SCM Source Control
TestTrack Pro Defect Management
QA Wizard Automated Testing

© 2004 Seapine Software, Inc. All rights reserved. Surround SCM, TestTrack Pro, and QA Wizard are either registered trademarks or trademarks of Seapine Software, Inc.

News Briefs

COMPANIES

BZ Media LLC, the publisher of SD Times, has launched a new magazine, Software Test & Performance. The first issue of the quarterly publication appeared at the end of March . . . **Gantthead.com**, an online community for IT project managers, acquired Projects@Work, a magazine covering project-management tools and real-world experiences. The 3-year-old publication had been owned by IIR Exhibitions USA to support its Project World conference.

PRODUCTS

The Web Services Interoperability Organization has released **Testing Tools 1.0**, a set of free C# and Java tools for testing compliance with its Basic Profile 1.0. The WS-I tool set contains **Web Service Communication Monitor**, which captures messages exchanged with Web services, and **Web Service Profile Analyzer**, which evaluates those messages and other documents, such as WSDL files and XML schemas. The Analyzer reports whether or not a Web service meets the Basic Profile interoperability guidelines, and where a failure has occurred . . . AccuRev Inc. has released an integration between its **AccuRev 3.3.1/CM** software configuration management software and Sun's Java Studio 5 development environment. AccuRev/CM is available for Linux, Solaris and Windows; the integration is in the form of a NetBeans plug-in that lets AccuRev/CM features be accessible in the Java Studio GUI . . . Human Profile, an Italian software company, has updated **DWebPro**, a stand-alone Web server application that runs directly from CD-ROM or DVD. Version 2.1 provides connectivity with the Firebird open-source database, SQLite, Microsoft's Access and ASP.NET. DWebPro, which runs on Windows, is free for noncommercial use; a commercial license costs US$450 . . . Version 4.0 of **MetaBase Modeler**, an enterprise metadata management tool from MetaMatrix Inc., has been released as an Eclipse plug-in . . . Slough, U.K.-based QED Business Systems Ltd. is offering **FireXML XML Extender**, which lets XML formatted data be stored directly in mainframe relational databases, such as IBM's DB2 or Computer Associates' CA-Datacom. The software also allows XML formatted files to be created directly from the data in the mainframe database . . . 4D Inc. has released **4D JDBC Driver**, for connecting Java applications and applets to the company's 4D Server 2003 relational database. The Type 4 driver is offered at no charge, and the source code also is available; it can connect to 4D Server databases running on either Mac OS or Windows . . . Numerical Algorithms Group Ltd. has released a version of its **NAGWare f95** Fortran compiler for Windows. The Windows compiler is given a version number of 4.2 and is designed to be compliant with the Fortran 95 standard. For Linux, Mac OS X and Solaris, NAG has been shipping a NAGWare f95 5.0 compiler that contains a new graphical debugger and Fortran 2003 extensions . . . BEA Systems Inc. has introduced a lower-cost version of its Java development software. **WebLogic Workshop Professional Edition**, US$1,000 per seat, is designed for application prototyping and small business deployments, and is limited to five simultaneous connections . . . Computer Associates International Inc. is offering **Unicenter WSDM Management Pack for Microsoft Operations Manager 2000** that lets users of both products monitor the health and status of enterprise Web services across .NET and J2EE environments. The management pack contains a database with information on alert descriptions, resolution tactics and processing rules . . . Parasoft Corp. has updated its **SOAPtest** Web services testing software to perform the same functions as the WS-I's Testing Tools 1.0 software, mentioned above. According to Parasoft, SOAPtest 2.5 replaces both the communications monitor and analyzer functions of the WS-I tools, and provides compatible reports. SOAPtest, which runs on Linux, Solaris and Windows, costs US$3,995 per seat . . . Fiorano Software Inc. has updated its **Fiorano ESB** enterprise service bus middleware. Version 3.5 includes BPEL4WS-compliant Web services orchestration and support for complex

▸ continued on page 12

Remedy Takes Action To Improve Business Processes

Update includes Approval Server, dynamic charts

BY DAVID RUBINSTEIN

The inclusion of a proprietary Approval Server, as well as more dynamic charts with the capability of drilling down into the underlying information, are among the new features in the release last month of the Action Request System 6.0 rapid application development environment from Remedy, a division of BMC Software Inc.

New Flashboards let users drill into charts for more detailed information.

The Action Request System is designed to help automate service requests or service-related business processes, such as customer service tickets, according to Eric Wrobel, senior product marketing manager. The system provides audit capability so users can track requests through the system and define what steps must be taken to get the request resolved.

For developers, the system includes a macro editor, a visual navigator for editing business processes for Action Request System applications, a documentation tool and an analyzer that follows every instance of the application's use of a back-end database. The suite also includes an integration engine that lets developers merge, for instance, vacation request forms with a company's finance system, Wrobel explained.

Remedy also updated the Flashboards included with the Action Request System, according to Wrobel. Flashboards graphically present application data and other metrics so developers and business analysts can improve their business processes based on response times as well as prioritize tasks. In version 6.0 of Flashboards, those users can drill down to gather more detailed information. Remedy includes five Flashboard user licenses with Action Request System.

The Approval Server lets users create new processes for approval, such as adding a step in a loan application if the amount of money requested exceeds a certain threshold, without requiring additional coding, Wrobel explained. The server handles request routing as well.

Action Request System 6.0 costs US$20,000 for three fixed-user licenses, including the Flashboards and Approval Server. A floating five-pack of additional user licenses costs $12,000, while a fixed-user five-pack costs $4,800. ▮

Niku Brings Clarity to Project Management

BY DAVID RUBINSTEIN

Two new modules—a process manager and a portfolio manager—have been added to the newly named Clarity 7, the latest IT management and governance system released in mid-March by Niku Corp. Clarity integrates with Microsoft Project, acting as a kind of a server-side repository for work being done with that tool.

Other project tools often are limited to scheduling of developers and keeping track of what projects they are working on, according to Niku's Mark Moore, executive vice president of products and services. In Clarity, ideas can be gathered into the process manager, decisions can be made as to approving the ideas and allocating resources to work on them, and then an assessment of what occurred can be done to improve processes and establish best practices, Moore said.

The new portfolio manager, he said, allows development managers to model projects, component assets and applications within the organization. Decisions regarding the timing of a release, assessing the risks associated with projects, and determining available assets can be facilitated with the tool, Moore said.

Moore claimed that in many instances, businesses have not been able to maximize the value of their IT investments. "Business units and IT haven't been in sync," he said. "People put spending into IT but couldn't track results."

Clarity consists of eight modules—management components for resources, finance, collaboration, projects and Clarity Studio and Workbench development tools—that sell for between US$20,000 and $25,000 per user seat, Moore said. The minimal buy, he estimated, is between $100,000 and $150,000. Clarity 7 is free to Niku 6 maintenance customers, including the new modules.

Niku's new direction has been confirmed by Royal Caribbean Cruise Lines, which plans to migrate to Clarity from Niku 6. "Niku does the enterprise job better [than competing offerings]," said Richard Shapiro, head of the program administration office for the cruise line's IT department. "Others may be more user-friendly, but Niku shines at helping senior management understand the assets."

The cruise industry was hit hard by 9/11, he said, and the company went from growth mode to support and recently returned to growth. "Niku has been an enabler during those shifts," Shapiro said. ▮

Compuware
OptimalJ®

THE POWER TO Develop, Transform, Reuse

Put your J2EE™ application development into overdrive—with unmatched quality and unprecedented flexibility—using Compuware OptimalJ. Increase developer productivity up to 90%. Seamlessly instill quality into development. Forge existing infrastructures and new technologies into an integrated whole. Realize business agility with applications that are truly reusable, time and time again.

THE POWER IS RIGHT HERE.

THE LEADER IN IT VALUE.

COMPUWARE®
www.compuware.com

News Briefs

MORE PRODUCTS

◂ continued from page 10

XSD schemas in both W3C and Microsoft formats. The software also adds new database adapters and has enhancements to the Fiorano Service Development Studio graphical IDE . . . Mindreef Inc. also has incorporated the WS-I Testing Tools functionality into its Web services diagnostic software. **SOAPscope 3.0**, which costs US$99 per seat, doesn't replace the WS-I tools, but allows them to be run through the Mindreef tool's user interface during the development process . . . Raining Data Corp. has released **Omnis Studio 4.0**, a rapid application tool for building Java applications. This version includes native database connectivity to MySQL and a new object-oriented report writer . . . Nexgen is offering **Nexgen Server SDK**, a set of Windows APIs for creating C/C++ server applications that use either TCP or UDP ports. Applications can be configured to run as Windows Services. The SDK, delivered as a dynamic link library, costs US$149.95 per developer . . . Atlassian Software Systems Pty Ltd. has launched **Confluence 1.0**, a J2EE knowledge management tool based on the wiki principles of collaborative programming established by Ward Cunningham in 1995. The software costs US$1,200 for 25 users, or $4,000 for unlimited users . . . StructuredSoft Inc. is offering **StructuredSoft Developer**, an Eclipse-based toolkit for AS/400 and iSeries developers. The toolkit includes a variety of tools for building J2EE applications for those IBM midrange servers . . . To its **XML Professional Publication** software, Xyvision Enterprise Solutions Inc. has added a Web-based style editor for XML content that uses the W3C's XML-FO specification. The software applies an XSL stylesheet to an XML instance, and uses that information to render that XML content to Postscript or PDF output . . . The ObjectStore division of Progress Software Corp. in April was set to release **ObjectCache 2.0** data caching middleware for C++ and Java applications, adding the capability to synchronize whole or partial enterprise databases in middle tier . . . Segue Software Inc. has updated its **SilkPerformer** load-testing software to work with Citrix's MetaFrame Presentation Server. Version 6.5 has new record and replay support for load-testing Citrix applications; it also introduces automatic result correlation capabilities to simplify the process of analyzing the root causes of errors and application bottlenecks . . . VMWare Inc. on April 5 was scheduled to release **VMWare Workstation 4.5**, the latest version of its multioperating system virtualization technology that has increased memory limits and support for Intel's Preboot Execution Environment (PXE) and Plug and Play USB devices, and integrates with Windows Performance Monitor. The software also improves support for the Linux kernel 2.6 . . . IBM Corp. is previewing **z/OS 1.6**, its operating system for zSeries z800, z900 and z990 mainframes. Among many changes, the new operating system will include new self-healing and autonomic computing functions as well as enhancements to its C/C++ compilers and debuggers, and will allow virtual 64-bit environments. The company has stated that z/OS 1.6 will not run on older S/390 mainframes . . . Flashline Inc. in late March released **Flashline Registry 4.1** asset management software with enhanced project-tracking and categorization capabilities, new reports and an assets-in-progress option.

STANDARDS

The World Wide Web Consortium has published **VoiceXML 2.0** and the **Speech Recognition Grammar Specification** as W3C Recommendations—its jargon for completed standards. The new standards will fill out the forthcoming W3C Speech Interface Framework . . . Seiko Epson Corp. and Renesas Technology Corp. have jointly developed specifications for the **Mobile Video Interface**, a high-speed serial interface designed specifically for text and graphics displayed on mobile communications devices. The specification will be open on a license-free basis to application developers and device makers. ▮

IBM Goes Back to the Future

Uses aspect orientation to bolster WebSphere, DB2

BY JENNIFER DEJONG

Offering a glimpse of a technology that lets developers modularize software in new ways, researchers from IBM Corp. articulated the company's commitment to aspect-oriented software development at the A0SD '04 International Conference in Lancaster, U.K., last month.

The idea behind AOSD is to speed up the software development process and make it much easier to make changes to applications, said Robert Berry, a distinguished engineer at IBM's Hursley software development laboratory in Winchester, U.K.

AOSD enables the developer to capture a policy in a single entity, such as a class, so that the policy can be managed separately from the code to which it applies, said Berry. A policy could define, for example, how security is implemented in an application, or how events are logged, he explained.

Containing the code for the policy in a "stand-alone aspect" is more efficient than the traditional approach, where multiple occurrences of that code are scattered throughout the main line logic of the application, said Berry.

The AOSD approach is faster and less error-prone than making changes by hand, where the error rate can be as high as 30 percent, IBM researchers found. "That is really shocking," said Berry.

ORIGINS IN THE '60S

The roots of AOSD go back to the 1960s, though IBM has been working with the technology for 12 years, said Bill Chung, a research manager at IBM's T. J. Watson research center in Hawthorne, N.Y.

While no single event is responsible for the renewed interest in AOSD, Chung said that the current approach to building applications by assembling components fits well with the AOSD concept.

IBM is currently using AOSD techniques to add failure-handling capabilities into its WebSphere and DB2 product lines, said Berry. Called first failure data capture, the idea is to grab detailed contextual information at the point where the exception occurs, said Berry. To do that, the policy's author stipulates exactly what process should be carried out each time an error is encountered.

For instance, the policy might say "acquire the following information, and make a call to the stack," said Berry. When they look at the exception logs, serviceability team members get highly detailed information, he said.

Berry said failure-handling capabilities are likely to show up in the WebSphere product line first, as early as next year. He said that developers are currently working closely with the WebSphere Studio Application Developer (WSAD) team, but he did not confirm that WSAD would be the first product to include the new capabilities.

The use of AOSD techniques has broad implications for how software applications are owned and managed. The exception-handling policy, for example, would belong to the serviceability team, not the developer who wrote the code that is being analyzed, said Berry.

Chung said the concept of ownership is central to IBM's long-term vision, where AOSD techniques will be applied not just to code, but to all artifacts in the software life cycle, including requirements, architecture, design, code, integration, testing, deployment and maintenance. ▮

THREE OF A KIND

At the AOSD '04 International Conference last month, IBM Corp. researchers showcased three open-source projects that illustrate AOSD techniques. They did not specify how the projects will show up in the IBM product line.

- Concern Manipulation Environment (CME): A suite of tools for creating, manipulating and evolving aspect-oriented software across the software life cycle. (www.eclipse.org/cme)
- A new release of AspectJ: An aspect-oriented extension to the Java programming language that enables the clean modularization of cross-cutting concerns, such as error checking and handling, and synchronization. (www.eclipse.org/aspectj)
- A new release of AspectJ Development Tools (AJDT): Provides Eclipse platform support for AOSD with AspectJ. (www.eclipse.org/ajdt)

Source: IBM Corp.

INFOPATH 2003 SERVICE PACK OUT

BY JENNIFER DEJONG

Extending its forms creation application, Microsoft Corp. made available on Feb. 23 InfoPath 2003 Service Pack, a preview of the Microsoft Office 2003 Service Pack, expected in late June.

InfoPath is aimed primarily at Microsoft Office users who create forms-based applications, such as sales or expense reports, that use XML to gather information from one source and route it to another, said Microsoft's Bobby Moore, an InfoPath product manager.

In addition to features for Office users—including digital signatures, e-mail attachments and the ability to recognize handwriting from the Tablet PC—Service Pack 1 offers capabilities that Microsoft hopes will entice enterprise developers to use InfoPath.

Chief among them is a toolkit that lets enterprise developers create InfoPath templates in Visual Studio .NET, said Moore. In the past, InfoPath developers could use scripting, noted Moore. "Now they can create, debug and build InfoPath applications using C# or VB .NET managed code," he said.

Also of interest to enterprise developers are the ability to work with ActiveX controls, XML schemas and ADO.NET data sets, and better integration with BizTalk Server 2004, said Moore.

InfoPath 2003 Service Pack and the toolkit for Visual Studio .NET are available free from www.microsoft.com/downloads. ▮

CARS™

Compuware Application Reliability Solution™

THE POWER TO Test, Validate, Deliver

Solve application reliability problems with Compuware's one-stop quality solution. CARS brings together the tools and expertise you need to establish quality assurance discipline. Manage risk with methodologies that align quality assurance activities to business requirements. Make informed deployment decisions. Implement best practices and confidently deliver applications your business can rely on.

THE POWER IS RIGHT HERE.

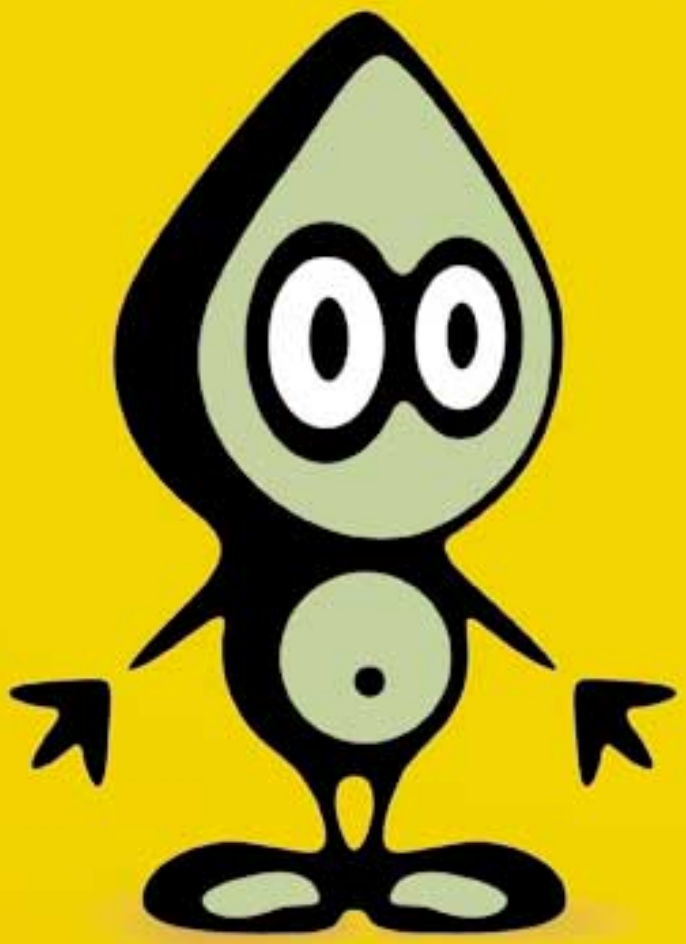
THE LEADER IN IT VALUE.

COMPUWARE®

www.compuware.com

JUST YOU AND 1,000,000 OF YOUR CLOSEST FRIENDS

www.codeproject.com



The Code Project has everything you need to migrate to Visual Studio .NET 2003. Visit www.codeproject.com and find out why we're your Visual Studio .NET 2003 Homepage. **The Code Project, the smart site.**

premium sponsors:

DUNDAS SOFTWARE

windows :: developer

msdn magazine

TESTING 101

◂ continued from page 1

management," which generally includes such topics as process planning, tracking, data collection, personnel and cost issues. He said that while important, management training should not exclude the fundamentals of good programming. "Requirements determine what needs to be done, and testing determines if it's being done right."

Gartner's Lanowitz said many organizations and individuals see testing as just a stepping stone toward a career in software development. "That's absolutely the wrong way to think. They are both equally important parts of the development life cycle and need to be treated equally, otherwise you'll always have a lack of talent and a pessimistic attitude toward people on the testing side," particularly by developers, who she said often have contentious relationships with their testing counterparts.

While Lanowitz had no hard empirical evidence to back up her assertions, her claims were echoed in a white paper titled "Software Quality: A Curriculum Afterthought?" published in March 2000 by the Association for Computing Machinery (ACM).

"If you look at the first couple of courses of most curricula, there is very little emphasis on quality," said Thomas Hilburn, professor of computer and software engineering at Embry-Riddle University in Daytona Beach, Fla., and co-author of the paper, which he said was based on extensive anecdotal evidence. "With a few exceptions, the most [students] get is a little on unit testing or code review," he said.

Quality isn't stressed at colleges, says Embry-Riddle's Hilburn.

Go Pro's Goldsmith added that software engineering programs are not teaching people how to discover the basic business needs, nor the skills to determine whether their code meets those requirements. "They don't understand that [applications] need to tie back to business requirements that they are unaware of."

Goldsmith and Lanowitz agreed that the solution lies in broadening curricula. "When somebody goes into computer science, they should learn about the whole development life cycle and take quality development into consideration," Lanowitz said, adding that students also are not being taught about the role QA takes in putting an application into production. "Colleges should have parallel tracks on how to put quality code to use by testing against requirements."

Goldsmith said that the addition of even one or two testing courses would be a big step forward. "I think that it's pretty hard to justify a program that doesn't have a course on stuff you spend half your time on."

NO TESTING JOB MARKET

"We do not consider software testing to be a career," said Azer Bestavros, professor and chairman of the computer science department of Boston University, which offers no courses specifically for testing. "Testing positions are the least desired job of undergraduates. When they go for internships, they get offers for QA-type jobs."

Bestavros was quick to point out, however, that BU's curriculum is not devoid of testing. "Testing is an underlying theme of every course we teach that has programming in it," he said, with the assertion that companies hire engineers, programmers or project managers. "As part of their work, they will have to do testing, but to offer a course on testing would make it an area of its own when it should be a dimension of every area."

Paradoxically, Carnegie Mellon University has no undergraduate courses in QA, but offers it in master's degree and certificate programs for post-grads.

"Testing tends to be the lower-skill, lower-pay position," said Lynn Robert Carter, principal fellow at Carnegie Mellon's Institute for Software Research International. "Most companies have the bias that if you aren't the designer you're low-pay, and those are outsourced jobs. And why would universities want to prepare people for jobs that are going to India?"

Carter said the post-grad QA programs attract mainly industry professionals seeking to advance their careers.

Hoping to make a difference is James Whittaker, professor of computer science at the Florida Institute of Technology. Whittaker, who introduced testing to the computer science department in 1996, said he met with resistance. "They said no one will want to take that kind of course."

Whittaker said that as mainstream applications and the tools to develop them reach parity in terms of feature sets and time-to-market, quality will be the main differentiator for applications. "In the future, quality will be the factor that determines whether one product makes a billion dollars and another fails miserably. So companies have to take it seriously."

Massood Towhidnejad, a professor of software engineering at Embry-Riddle University, said that such change has been on the horizon during the past decade. "Software testing in the industry 10 years ago was looked at as grunt work—something that was not important and done at the very end. And the lack of concentration in curriculum is in part the responsibility of the industry. Nowadays, you see the best engineers being put on the quality team because quality is now more of a major issue." ■

Where's the sleeping cat?

How many times did you use Sleepycat's™ Berkeley DB™ today?

If you used email, browsed the Web, bought a book online, or traded a stock, you may very well have used Berkeley DB without knowing it. You'll find Berkeley DB in every copy of Linux, BSD UNIX, Apache, sendmail, Perl and Mozilla. And in commercial products from Cisco,® Sun,® HP,® EMC,® Motorola® and Apple,® as well as services from Amazon,® Google® and AOL.® Read more about the sleeping cat at www.sleepycat.com/wheresthecat.pdf.

Berkeley DB is the most widely used data management software in the world with over 200 million copies deployed. Software developers rely on it to build faster, lower cost products and to shorten development cycle time. Download Berkeley DB today.

www.sleepycat.com

SLEEPYCAT SOFTWARE

Makers of Berkeley DB

© 2004 Sleepycat Software Inc. All trademarks, registered marks and service marks are the property of their respective owners. All rights reserved.

JNet Direct's JSQLMapper Ties SQL to XML

BY YVONNE L. LEE

JNet Direct Inc. is about to ship a graphical tool designed to import and export information from relational databases using XML.

The Herndon, Va., company is hoping to differentiate its product, JSQLMapper, from other XML data access tools by its interface, by the bidirectional data exchange, and through version control on individual pieces of data.

"The big issues are [first] the visual tool is distinct in how it builds the mapping," said Burke Cox, president and founder. JSQLMapper has a graphical wizard for developers to pick the information from the database. Using the wizard, or mapping editor, developers can create, read, update and delete information.

"The second distinguishing feature is that the XML mappings do create, read, update and delete operations," Cox said. "Not only can [the tool] take relational data and generate an XML document, it can take an XML document and populate a relational database. Other tools take a single relational table and turn it into an XML document. In our case, you're able to do complex tables and do one-to-many. Upon return, it will populate the database," he said.

According to a company spokesman, JSQLMapper has version controls it calls "stale write protection" that make it possible to update data without overwriting crucial information.

The company has not yet established pricing for the tool, which is scheduled to ship in early May. ■

Programmer's Paradise®
Your best source for software development tools!

IP*Works! Red Carpet Subscriptions by /n software
Paradise # D77 0148 $1264.99

LEADTOOLS Document Imaging v.14
by LEAD Technologies
Paradise # LDS 0520 $1662.99
www.programmersparadise.com/lead

RoboHelp Office
The Industry Standard in Help Authoring
Paradise # E75 0342 $879.99*
www.programmersparadise.com/ehelp

Paradise Picks

DevTrack 5.6
Powerful Defect and Project Tracking
by TechExcel
programmersparadise.com/techexcel
Paradise # T34 0199 $482.99

TeeChart for .NET Control
by Steema Software
Paradise # SOT 021E $474.99
www.programmersparadise.com/steema

dtSearch Web with Spider
Single Server Paradise # D29 070F $888.99
Download dtSearch Desktop with Spider for immediate evaluation
www.programmersparadise.com/dtsearch

c-tree Plus®
by FairCom
NEW! SQL Support!
Paradise # F01 0131 $850.99
www.programmersparadise.com/faircom

TX Text Control ActiveX 10.0
by The Imaging Source
Add RTF, DOC, HTML, CSS and PDF Support to Your Application
NEW .NET VERSION!
Download a demo today.
Enterprise Edition Paradise # T79 0214 $1,495.99
Professional Edition Paradise # T79 0215 $729.99
www.programmersparadise.com/theimagingsource

Sun™ ONE Studio 8, Compiler Collection
by Sun Microsystems
New X86 Platform Version!
Paradise # S69 0U66 $960.99
www.programmersparadise.com/sunone

Teamstudio For Java Bundle Edition 4
by Teamstudio
Paradise # T2M 0103 $1,072.99
www.programmersparadise.com/teamstudio

PR-Tracker™ v5.1
by Softwise Company
Paradise # S0R 0147 $117.99
www.programmersparadise.com/softwise

800-445-7899 • programmersparadise.com

MORE VS2005 TO BE SHOWN AT TECH-ED

BY JENNIFER DEJONG

Microsoft Corp. is expected to show new features in Visual Studio 2005, formerly known as "Whidbey," and to demonstrate enterprise applications that span multiple servers within the Windows family at its Tech-Ed 2004 conference in San Diego beginning May 23.

The key theme of the conference is bridging the gap between IT administrators and application developers, said Microsoft's Marie Huwe, general manager of developer tools marketing in the developer and platform evangelism division.

Aimed at both groups of technical professionals, the show is expected to provide breakout sessions that address that topic, as well as a range of others, including smart-client architecture, Sarbanes-Oxley compliance, the service-oriented enterprise, BizTalk 2004 for Visual Basic and C# developers, and SQL Server 2005, formerly called "Yukon." ■

Microsoft Tech·Ed 2004

CONFERENCE: May 23–28
San Diego Convention Center

EXHIBIT HALL HOURS:
Monday, Noon–3:30 p.m.; 6 p.m.–9 p.m. (Exhibit Hall Reception)
Tuesday, Noon–5 p.m.
Wednesday, 10 a.m.–3 p.m.

KEYNOTE SPEAKERS:
Monday, 9 a.m., Opening Keynote, Steve Ballmer, CEO, Microsoft Corp.

www.microsoft.com/seminar/teched2004

Macromedia Ships Flex Framework

BY DAVID RUBINSTEIN

If service-oriented architecture can modernize a company's back-end systems, then Macromedia Inc. believes its Flex rich-client application framework is a similar modernization for the front end.

"There's a new enterprise architecture emerging," said Jeff Whatcott, vice president of product management and marketing. "Assets are being integrated into a Web services fabric. On the front end, a rich client is the best of both worlds. You get a scalable, flexible back end delivered with a better user experience."

Flex, which was announced in November 2003 and begin shipping March 29, runs on a J2EE application server and contains a library of user interface components. It introduces the XML-based Macromedia Flex Markup Language (MXML) for laying out the components, and uses ActionScript, Macromedia's Flash object-oriented scripting language. Flex also has a proxy service to expose Enterprise JavaBeans automatically as Web services and connect to the Flash player on-the-fly, Whatcott explained.

Whatcott said Java developers have told Macromedia that Java ServerPages, the front end used with many Web-based Java applications, "is the weakest part of the application and feels the clunkiest." And HMTL, he added, was originally written for viewing documents. "It's a stateless model," he said, which doesn't lend itself to enterprise applications.

Flex costs US$12,000 for two server processors and includes annual maintenance, he said. Whatcott also said that Project Brady, the company's plan to bring this application programming model into its Dreamweaver Web development platform, should be finished by September. ■

PreEmptive Reverses Obfuscation

BY EDWARD J. CORREIA

For users of PreEmptive Solutions Inc.'s Dotfuscator and DashO code obfuscation tools for .NET and Java, the company in late March released Lucidator, a tool that reverses the code protection effects of those tools, enabling development and QA teams to perform program diagnostics of stack traces coming in from protected programs installed in the field.

According to PreEmptive president Gabriel Torok, as companies increasingly seek to protect their intellectual property from reverse engineering by competitors or would-be hackers, so too must nondevelopers such as quality-assurance and help-desk staff be equipped with the tools they need to interpret feedback returned by failed applications. "If you've obfuscated your EXE or DLL files, stack trace data is meaningless."

Available now, Lucidator plugs into Microsoft's Visual Studio .NET and integrates with Ant Java build tools and the NAnt open-source build tool for .NET, Torok said. Pricing starts at US$3,000 for 15 users. ■

How is your
CMM/CMMI process
development team doing?
Is your organization burning valuable time, money, and resources developing CMM® and CMMI® compliant processes from scratch? With processMax, your software development organization immediately begins managing software development and maintenance projects in guaranteed compliance with the CMM and CMMI. processMax is the web-based project management system providing your managers and developers with step-by-step procedures, integrated document management, and automated workflow. processMax integrates process with day-to-day work, giving managers real-time, fact-based insight into project status. processMax is the proven solution – as verified by more than 40 successful independent appraisals to date.
processMax
THE PROCESS SOLUTION
pragma SYSTEMS CORPORATION
Toll Free: 877.838.PMAX
Direct: 703.796.0010 x.4
www.pragmasystems.com
E-mail: Info@pragmasystems.com
GSA Schedule Contract No. GS-35F-0820K. processMax is a registered trademark of pragma SYSTEMS CORPORATION
CMM and CMMI are registered trademarks of Carnegie Mellon University. Copyright ©2004 pragma SYSTEMS CORPORATION

PERVASIVE

◂ continued from page 1

Texas-based Pervasive.

Hoskins said traditional integration methods have failed to scale and still rely on custom code. "Thirty years of wiring things together has resulted in a tangle of spaghetti code," he said. Further, he said many integrations are quite costly. "We're finding a shocking level of service that's required" by integration tool vendors, he added. "Some had said there is 5x to 10x spending above licensing."

Prior to the acquisition, Data Junction had been moving away from the basic ETL "Swiss Army knife" toolkits that are used by a product team and then put on the shelf until next time, and toward a new approach—djCosmos—that addressed continuous runtimes. "The core plumbing of transformation and connectors is the same with the event-driven, real-time solution," Hoskins said. "We had to support the message connectors and add the Internet protocols, then a high-level flow designer. That's what djCosmos was all about. It became a mountain of raw materials."

So, in a return to Data Junction's roots, Pervasive extracted the ETL technology from djCosmos and created Migration Toolkit, which sells for under US$2,000, Hoskins said. It includes a graphical map designer with 40 to 50 connectors for such things as SQL databases and spreadsheets.

Pervasive Data Integrator, at about $2,500 per developer seat with a $5,000 charge for a one-CPU Windows license, includes 80 to 100 connectors. It's designed for marts or warehouses that do ETL on a schedule or need to aggregate content from unstructured sources, he said.

Pervasive Business Integrator, with developer seats at about $4,500 and runtime engines between $10,000 and $15,000, is the message-based solution, for such things as an enterprise message bus, or a service-oriented architecture using XML Web services, Hoskins explained. The tool can work with Microsoft's MSMQ, IBM's MQ Series and other JMS-compliant tools, and can handle non-XML documents in such transaction formats as EDI, UN/EDIFACT, HIPAA and SWIFT, Hoskins said. ▮

ENTERPRISE-STRENGTH AUTOMATED TESTING
LISA for J2EE
LISA for Web Services
LISA for Websites
LISA for JDBC
LISA for JBoss
LISA for WebSphere
LISA for WebLogic
LISA for Oracle
LISA for Everything
"LISA ISN'T GATHERING DUST ON MY SHELF LIKE OUR PAST ATTEMPTS AT AUTOMATION."
-QA Engineer
"I'LL NEVER WRITE ANOTHER TEST CLIENT BY HAND AGAIN!"
-Developer
"I USE LISA TO VALIDATE THE BUSINESS REQUIREMENTS MYSELF!"
-Manager
Put your heads together and test.
The struggle to test Enterprise Java applications, web services, and websites is over. LISA™ software from iTKO provides a true no-code, easy to use testing engine that really shines when you are tackling the most complex implementations.
Get your heads aligned at every step of your project: from design to implementation, to build and acceptance. LISA offers your constituents the ability to conduct inline testing. So now your team will not only correct mistakes, but prevent misunderstandings that can kill a project.
LISA out-features and out-performs all other QA tools and gives you real unit, regression, functional, and load testing for all J2EE servers, web services, websites and databases. JUnit and Ant are fully supported. Create no-code test cases with point and click functionality. All at prices that give you the incentive to equip and train everyone who needs to participate without hidden costs.
Let's start making quality the headline of your team's story.
LISA
LISA™ from iTKO. Because everyone should own quality.
Download a free evaluation copy!
http://www.itko.com/lisa
http://www.iTKO.com
info@itko.com
iTKO

McCabe's CM Tool Updated

BY DAVID RUBINSTEIN

A new Java-based multiplatform user interface and the ability to perform conflict resolution on the client rather than on the server are two of the new features of TRUEchange 3.0, the updated configuration and change management tool released last month by McCabe & Associates Inc.

The tool provides different views of the projects based on the role of the user, such as a high-level administrative view of all projects and a view for release engineers of what has changed between releases, according to Rupert Richardson, TRUEchange and TRUEtrack product specialist. There are also new views called CM View, which provides access to repository objects and their related data elements, and Workspace View, which shows any differences between the repository and the user's files.

Richardson explained that the client-side conflict resolution feature allows developers to resolve differences before returning the code to the server, where it might not compile correctly because of the conflict. In TRUEchange, the build is done locally and then the code is checked in, he said. ▮

ADVERTISEMENT

Software FX gets a taste of its own medicine

Self implementation increases understanding of customer needs

Most developers agree that the one thing you can count on with code is that it will change. When changes happen, most of us don't have the time to go through each line of code. Although components aren't an absolute requirement for development, they can save you significant time when making code changes. Components reduce the mundane engineering that developers worry about like portability, interoperability, scalability and performance. And that's a big advantage.

So, if you think of components not as something that eliminates the need to write code, but instead as something that makes the process of writing code in a larger system manageable; you may have come up with a solid conclusion. The understanding that having a component-based application is important, not because somebody told you so, but because you understand the benefits it brings to the development process.

Chart FX for .NET shown with the ▲ Wizard and the ◀ Resource Center within Visual Studio.NET.

During the porting of Software FX's corporate intranet to ASP.NET that we came to experience and realize what .NET had to offer and the challenges involved with porting a functional application to a new platform. To us it was like *a taste of our own medicine*, as most of our intranet reports were built using our own product, Chart FX.

Interestingly, our developers had little problems or concerns connecting Chart FX to a myriad of data sources like SQL, XML and text files coming from external distributors. Similarly, they didn't report any security, performance or scalability issues; or complain about porting old Chart FX code, most of which were legitimate concerns when we decided to make the switch to .NET.

Instead, we quickly realized our developers spent an unusual amount of time coding business rules and logic that would help upper management visualize areas that needed attention to make critical business decisions. Ultimately, we concluded that developers could not divorce themselves from coding and configuring data-presentation components since they were coupled directly to the data extraction process. Therefore, they couldn't embrace the code-behind concept that separates code from the presentation layer. For example, we wanted chart markers to be colored according to a certain condition and provide drilldown capabilities to find the root of such situations, this had to be done by carefully inspecting the data and coding such conditions into the application.

This way their main coding effort was invested in making the chart reflect these conditions, yet they were able to come up with truly astonishing charts in terms of presentation. The Chart FX for .NET Wizard and Resource Center were crucial to achieving this goal with little or no development efforts on their part. To us, that was a major accomplishment since Chart FX for .NET provides over 800 properties, methods and events that they didn't have to learn before they could be productive with our tool. The last thing you want to do when porting an application to .NET is spend significant resources learning how third-party components work and behave.

From Primary Care to Specialist

However, in the end we found ourselves in a situation where the GUIs, and especially the charts, were tightly bound to the data. And as a result, if any business rules changed or any of our data itself changed, it had this tremendous rippling effect throughout our code. We knew this situation would make our intranet unable to respond to future business needs. In other words, an application that although built with the latest .NET technology, was resistant rather than resilient to changes.

This situation reached dramatic proportions when our developers were investing countless hours trying to satisfy the information needs of our sales, marketing and support departments. At this point, they were concerned that we were diverting from the original project and were still far from completion.

The solution, to us, was simple: *Chart FX Extensions*.

With these extensions, Chart FX provides easier integration to connect more meaningfully with your data. This means developers are no longer required to spend countless hours configuring a generic charting component to specific data. Instead, the Chart FX Extensions can be stitched together to adapt to data sources enabling organizations to quickly and economically gain access to specialized solutions that meet unique business needs.

To the right are a series of snapshots about the Chart FX Extensions and how we were able to consume them for our own benefit. In the end, Chart FX had the cure for what ailed us.

How does marketing keep track of where products sell?
This is performed by a different set of queries that integrate data from our internal point of sales system as well as data coming from external distributors, each of which has its own different IT system. We ended up with an ASP.NET page that would take data from a variety of sources, including SQL and XML, and map the data using universally supported SVG images. **Chart FX Maps** would simply take this data source and would allow logical groupings and views that would otherwise take weeks to code. Get more information at www.softwarefx.com/maps.

How do our managers slice and dice our sales data?
We OLAP-enabled our point of sales system using SQL Server Analysis Services and integrated **Chart FX OLAP** and ADOMD to connect to a multi-dimensional data source that is navigated without additional efforts from our developers. The result: a simple ASP.NET page that exposes a chart with a powerful, yet simple, user interface that allows data pivoting, drilldown and slicing to present data views that would otherwise take months to code. Learn more at www.softwarefx.com/olap.

How do we analyze thousands of leads?
Populating and configuring a charting solution with large datasets is not easy, the chart looks clogged and it is difficult to read. **Chart FX Statistical** allows us to focus on data analysis, quality control and data modeling on processes that generate large amounts of data like trial downloads and web traffic. We bound the chart to the database and the Chart FX Statistical extension quickly produces descriptive statistics, correlations and SPC charts, among others. Get more at www.softwarefx.com/statistical.

How can our staff react immediately to support requests?
Our developers built a real-time data extraction application from on-line newsgroups, Microsoft Exchange Server and support accounts that uses **Chart FX Real-Time**'s server-side in-memory data storage to create charts with open support issues that are displayed in real-time in the browser without the need to manually refresh. See more at www.softwarefx.com/realtime.

10 YEARS
Software FX
Any Chart, Anywhere!

www.softwarefx.com | In the US: (800) 392-4278 • In the UK: +44 (0) 117 905 8733 • In Germany: 0800-24 27 839

©2004 Software FX. All rights reserved.
Chart FX is a registered trademarks of Software FX, Inc.

OPEN J2SE

◂ continued from page 1

that is not already solved."

Despite McNealy's remarks, IBM's Smith said he remains optimistic. He asserted that open-sourcing J2SE will reduce Sun's research and development costs for the platform and will improve the Java language by attracting more developers to it, particularly those working in the Linux community. "We have a good understanding of building open-source communities. Look what we have done with Eclipse," said Smith. "[Linux developers] want and expect Java to be a piece of it."

He noted that IBM and other Java vendors have made substantial contributions to the Java Community Process (JCP), and also said open-sourcing J2SE is a strategic step to take against Microsoft Corp.'s .NET development framework.

Asked how the loss of income from J2SE licensing fees would impact Sun's revenue model, Smith said, "Our goal is not to put them in a compromising position. But none of us makes any money on J2SE."

Gary Barnett, an analyst at London-based research firm Ovum Ltd., said he did not think the Sun-IBM discussion about open-sourcing Java is over. "Sun has shown us many times that it is capable of changing its mind."

More important, he said, it is not healthy for Sun or Java for Sun to simply say no to IBM. "It's time for Sun to decide precisely what role it wants to play with Java and how best it can continue to encourage third parties to contribute. Sun needs to figure out what they have gained so far and what they can hope to gain in the future," he said.

ALREADY OPEN?

He noted that the reason Sun has long refused to open-source Java is that the company already views the technology as open. "In some sense, that is a legitimate argument. The JCP is pretty transparent," he said.

But Barnett said Sun can no longer afford to maintain that stance. Unlike IBM, Sun did not foresee the impact open-source projects would have on its strategy and products. "IBM has taken a mature approach to open-sourcing," he said. For instance, early on, IBM understood the importance of the Apache Web server to the Java world and embraced it, he noted.

"IBM is in the business of supporting commoditization of lower-level services, because it expects to make money on higher-level services," Barnett said. Its vision of the WebSphere platform—and brand—emerged early on, in the late 1990s, he said. "But Sun is yet to establish itself as a platform vendor."

"Sun is in a position of weakness. And that weakness is projecting out to the Java community," added Bill Whyman, president of Washington, D.C.-based research firm Precursor Group. "Sun needs to come up with a better plan for how it hopes to capture the value of its industry-leading but under-commercialized Java technology."

It's not clear what Sun believes it will gain by saying no to IBM's proposal, said Whyman. While Sun has never disclosed revenue it derives from licensing Java specifications, it's not a huge amount, he said. "To some extent, there is ego involved," said Whyman. "They invented Java." Nonetheless, pressure for Sun to articulate what it wants to do with Java will continue, he said.

A Sun spokesperson said Sun is in discussions with "six or seven companies" regarding the open-source future of Java, not just IBM, but would not name them.

One influential player in this debate is Eric Raymond, president of the Open Source Initiative. He said he is discussing with Sun the possibility of releasing the reference implementation and the libraries under an open-source license, but declined to specify whom he is talking to.

Under Raymond's plan, Sun would provide certification services around Java, which would allow it to continue to control the Java brand and derive revenue from it.

A BEA Systems Inc. spokesperson said in a statement: "We agree with IBM that some changes in Java governance are needed, but we aren't prepared to discuss anything specific at this time."

JBoss Inc. president Marc Fleury and Oracle Corp. did not respond to interview requests on this topic.

"There has always been a faction within Sun that wants to open-source Java," said Raymond. "But there is another group that says, 'If you open-source Java, bad things will happen.' But bad things are happening anyway," he said, noting that the Java language is in danger of losing out to Microsoft's C# language, as well as to languages such as Perl and Python. ▮

SUN BLOG FOR BRAY

In mid-March, Sun Microsystems Inc. nabbed XML expert Tim Bray to serve as technology director. Bray joined the World Wide Web Consortium's XML Working Group in 1996, where he co-edited XML 1.0 along with Jean Paoli and C. M. Sperberg-McQueen. He also was involved in Weblogs and the Really Simple Syndication specification. His work at Sun will involve blogs and syndication. He reports to CTO John Fowler.

USE MICROSOFT® VISUAL STUDIO® .NET TO CREATE APPLICATIONS FOR ALL OF THESE DEVICES...
Crossfire™ by AppForge® enables Microsoft developers to create multi-platform mobile and wireless applications using a single, standard development environment. This means more efficiency and better marketability for the developer, and more revenue and profits for solution providers.
Crossfire
Sponsored by Visual Studio.net
- UIQ NOKIA Palm OS - Nokia Series 60 - Pocket PC - Symbian OS -
AppForge offers the same multi-platform development capabilities for the Visual Basic developer through our MobileVB® products. Try any of our products FREE for 30 days at www.appforge.com.
AppForge

APRIL BUZZ

Jtest®

Verifying Algorithms Through Unit Testing

Complicated algorithms are typically contained within one class or function so that developers can easily manage them. How then, can you test the functionality of your algorithms and verify that they correctly solve problems before you have a full application written? The answer lies in unit testing.

Unit testing is the perfect strategy for verifying and testing algorithms. Unit testing involves testing software code at its smallest functional point, which is typically a single class. Each individual class should be tested in isolation before it is tested with other units or as part of a module or application. By testing every unit individually, most of the errors that might be introduced into the code over the course of a project can be detected or prevented entirely.

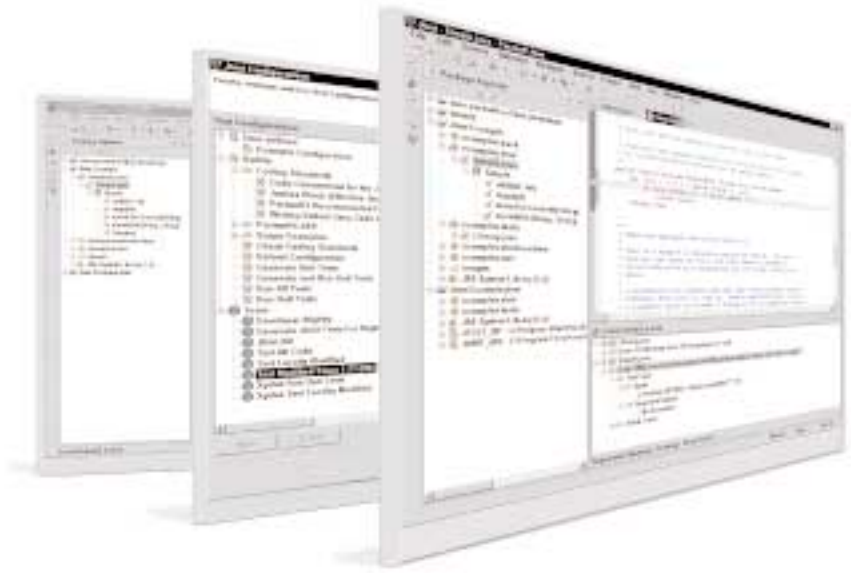
I suggest that you investigate the benefits of performing unit testing to verify the functionality of your algorithms. Performing thorough unit testing reduces the amount of work you will need do at the application level, and drastically reduces the potential for errors.

By the way, unit testing is a fundamental part of Parasoft's Automated Error Prevention (AEP) Methodology. You can find more information about Automated Error Prevention at **www.parasoft.com**

*– **Adam Kolawa**, Ph.D.*
Chairman/CEO of Parasoft

Automate unit test case generation

for JUnit and Java with Parasoft Jtest®



Introducing Parasoft® Jtest®

Parasoft Jtest is the first and only automated unit testing tool for Java development.

With just a click, Jtest reads and analyzes code – quickly creating harnesses, stubs and test inputs – and tests without user intervention. Jtest also enables you to automate regression testing and coding standard analysis. For loyal JUnit users, Jtest is designed to fully support existing test cases and automate the creation of new JUnit-style test cases.

Learn how Jtest can enhance JUnit capabilities...

Download a free eval copy of Jtest along with our informative new white paper entitled "Automated Java Unit Testing, Coding Standard Compliance, and Team-Wide Error Prevention."

For Downloads go to www.parasoft.com/jtest

Or call 888-305-0041 x3303

PARASOFT®
We make software work.®

FEATURES

- Fully integrated with JUnit and Eclipse
- Finds and fixes errors fast
- Automatically generates JUnit test cases
- Customizable testing and reporting

BENEFITS

- Makes error prevention feasible and painless, which brings tremendous quality improvements, cost savings, and productivity increases
- Makes unit testing and coding standard compliance feasible and painless
- Encourages the team to collaborate on error prevention

PLATFORMS

Windows 2000/XP

Linux

Solaris

Contact Info:

Parasoft Corporation
101 E. Huntington Dr., 2nd Flr.,
Monrovia, CA 91016
www.parasoft.com

Copyright©2004 Parasoft Corporation. All rights reserved. All Parasoft product names are trademarks or registered trademarks of Parasoft Corporation in the United States and other countries. All others marks are the property of their respective owners.

New IBM alphaWorks Technology Seeks to Raise Software Quality

Structural Analysis for Java finds architectural flaws

BY JENNIFER DEJONG

Aiming to improve software quality earlier in the development process, IBM Corp. last month made available on its alphaWorks site Structural Analysis for Java (SA4J), a technology that allows developers to pinpoint architectural flaws in Java applications in order to fix them before problems occur.

"The earlier you address problems in software, the easier—and less expensive—it is to fix them," said Geoffrey Bessin, IBM Rational's market manager for software quality.

While developers assume any problems arise from the code, it's often the underlying architecture, said Bessin. "But if you check the architecture early in the process, you can predict where there might be issues."

Every Java application is a network of packages, classes, interfaces and the relationships among them, so applications that grow over time, without any attention to maintainability and code reuse, are often unnecessarily complex. "Too many dependencies can result in instability," said Bessin.

To pinpoint potential flaws in the application, SA4J provides a visual model of those dependencies. It then uses a mathematical formula to detect structural "anti-patterns," essentially examples of bad design that are repeated over and over again, said Bessin. Bad structural elements are identified as one of six patterns: tangle, local breakable, global breakable, local hub, global hub, and core component.

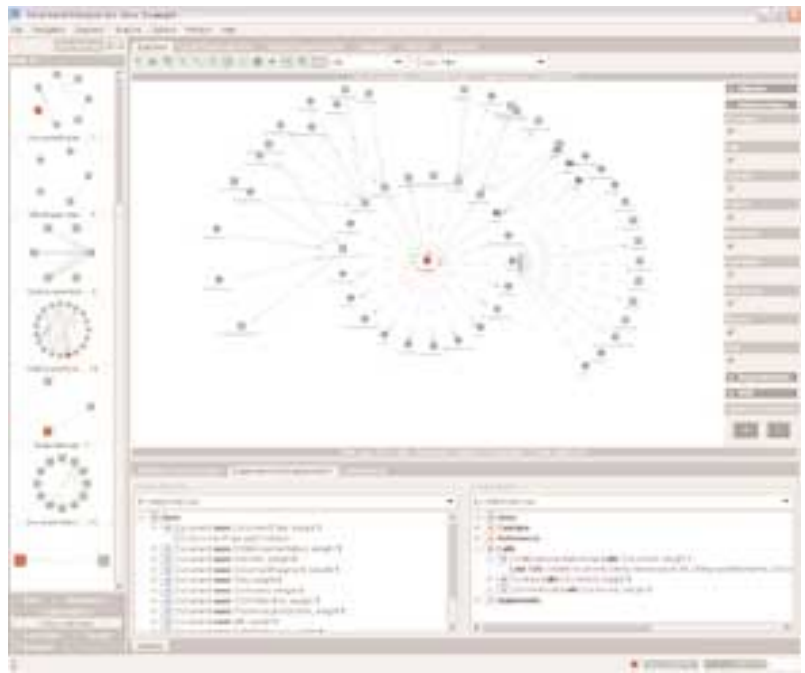
"The developer must then decide whether or not the detected anti-pattern requires improvement," said Bessin.

SA4J enables developers to see the implications of changes before they make them, said Bessin. "You select a component, and the tool shows you all of the interfaces, parents and children, so you can measure the downstream effect," he said.

Asked how SA4J differs from capabilities included in products such as Compuware Corp.'s OptimalJ, Bessin acknowledged there are tools on the market that provide a visual model of dependencies. But he claimed that SA4J is the only tool that uses anti-patterns to assess architectural stability.

He declined to comment on whether SA4J is likely to be incorporated in IBM's WebSphere Studio Application Developer. "SA4J is available to the alphaWorks community today and may or may not become part of IBM products in the future," he said.

Developers can download SA4J free of charge at www.alphaworks.ibm.com/tech/sa4j. ■



SA4J provides a visual model of the dependencies in a Java application.

SPEECH SERVER

◂ continued from page 1

Microsoft's director of marketing for the Speech Server group.

Microsoft is positioning Speech Server as a direct replacement for existing interactive voice response (IVR) systems, to allow callers to use a telephone's touch tones to navigate menus. Unlike most IVR systems, Speech Server also lets callers interact with the application not just by pressing the telephone's keys, but also by "speaking" responses that fit a limited vocabulary, said Mastan.

While some existing IVR applications are also speech-enabled, they are "black box proprietary systems," said Mastan, which force customers to assemble components from multiple vendors, write code to connect them, or pay systems integrators high prices for custom-developed solutions.

Central to Speech Server is a software development kit that adds speech controls to VS.NET. "When you fire up Visual Studio, you see a speech tab," said Mastan. It lets developers speech-enable existing or new ASP.NET applications using standard programming techniques. While many developers lack experience with speech applications, "they know objects, properties, methods and scripting," said Mastan.

Key tools in the Speech Server SDK include a grammar editor, which walks developers through the process of adding words or phrases they want the application to recognize; and a prompt editor, which lets developers record .wav files they need to incorporate in the application.

Among other tools included is a speech control editor, which lets developers place speech controls on a Web page, combining them with Web controls, grammars and prompts, and Question and Answer (QA) controls. QA controls consist of a prompt to the user and recognition of the user's response.

SALT TALKS

The Speech Server tools are based on the Speech Application Language Tags (SALT) specification, an extension of XML that enables developers to add speech capabilities to Web pages. The specification competes with Voice Extensible Markup Language (VoiceXML).

But 90 percent of the speech applications existing today are proprietary IVR systems, not based on either Web standard, according to Microsoft. "That is one reason why speech applications have been slow to take off," said Mastan. Microsoft estimates that proprietary offerings range in price from US$500,000 to multiple millions.

The Speech Server standard edition, which supports up to 24 simultaneous calls, costs US$7,999 per server processor. The enterprise edition, priced at $17,999 per processor, supports an unlimited number of calls.

MORE FROM VSLIVE

While Speech Server dominated VSLive, it wasn't the only story at the event. At the show, Microsoft revealed the official name of the next release of Visual Studio .NET. Formerly code-named "Whidbey," the new version, expected in the first half of next year, will be named Visual Studio 2005—the .NET name is gone from both the complete suite and the individual tools. So, Visual Basic .NET will be replaced by Visual Basic 2005.

In his keynote at VSLive, Microsoft chairman Bill Gates demonstrated how Windows-based mobile devices can work with Speech Server 2004 and MapPoint Location Server to provide an integrated system for developing wireless applications. He displayed Motorola's MPx, a handheld device that was running Microsoft's Windows Mobile 2003 Second Edition, an interim release of the Windows CE operating system. The Second Edition now allows screens as large as VGA. There did not seem to be any significant change in the mobile platform, from a developer perspective. ■

IBM CAN'T BACK .NET CLAIMS

Even as Microsoft Corp. is updating its Windows platform, archcompetitor IBM Corp. is claiming that .NET isn't competitive. In a statement accompanying its Feb. 25 announcement that 200 independent software vendors had joined its ISV Advantage program, an IBM spokesperson asserted that "ISVs are choosing to move away from Microsoft because of the company's competitive nature as well as prohibitively high deployment costs."

When queried about that claim by SD Times, IBM stood by the claim but couldn't back it up.

"There is an issue with [Microsoft's] licensing," said IBM's Leslie Givens, program director of marketing for developer relations, in a phone interview last month. "It becomes very expensive."

Asked whether IBM's licensing terms for ISVs were cheaper than those offered by Microsoft, Givens offered to make that information available to SD Times. "There is an impression that Microsoft is cheaper, but it's not," she said. But during a follow-up to acquire that data, an IBM spokesperson told SD Times, "Unfortunately, we don't have specific comparison information on IBM versus Microsoft license costs."

IBM did provide names of two companies in its ISV Advantage program that it claimed made a switch from offering .NET-based software to supporting IBM's platforms. When interviewed, those ISVs couldn't support IBM's story either.

For one such company, Notes developer Interchange Solutions Inc., based in Markham, Ontario, the IBM partnership was a good fit, but joining it had nothing to do with Microsoft. "Microsoft licensing costs did not factor into the decision," said Ryan Saunders, director of business development and marketing at Interchange.

Another company cited by IBM, Costa Mesa, Calif.-based TouchTone Corp., partnered with IBM to build WinTouch eCRM, a customer relationship management package for the IBM iSeries midrange server. But Rich Hall, TouchStone's vice president of sales and marketing, said that a Microsoft partnership was never a viable option. "At one time—probably eight or 10 years ago—[an earlier version of] our product ran on Windows, but there wasn't a lot of benefit there." —*Jennifer deJong*

Want to connect your development teams seamlessly?
You've got two choices:

Use Perforce **or** Spin your wheels

Perforce is the Fast Software Configuration Management System that gets distributed teams working together in no time.

Other systems require an army of consultants, months of hacking, and probably the odd dab of crazy glue. With Perforce, nationwide and worldwide development teams can focus on working together without worrying about holding it together.

Work anywhere. Requiring only TCP/IP, Perforce makes use of a well-tuned streaming message protocol for synchronizing client workspaces with server repository contents. And the Perforce Proxy offers caching to provide remote users with quick download times while maintaining real-time access to project activity and status information.

With Perforce, the fast way is the right way. Install it fast, learn it fast, run it fast. With other SCM systems, developers face an unpleasant choice: do it the right way or do it the fast way. Perforce's speed and reach mean the fast way is the right way. See how Perforce compares with other leading SCM systems at: http://www.perforce.com/perforce/reviews.html

Run at full speed even with hundreds of users and millions of files. At the core of Perforce lies a relational database with well-keyed tables, so normal user activity can be accomplished in near-zero time. Larger operations (like labeling a release and branching) are translated into keyed data access, giving Perforce the scalability that big projects require.

Develop and maintain multiple codelines. Perforce's Inter-File Branching lets you merge new features and apply fixes across codelines. Smart metadata keeps track of your evolving projects even while they are developed in parallel.

Truly cross platform. Perforce runs on more than 50 operating systems, including Windows®, UNIX®, Linux®, Mac OS® X, AS/400, and more.

Integrate with leading IDEs and defect trackers. Visual Studio.NET®, Visual C++®, Visual Basic®, JBuilder®, CodeWarrior®, TeamTrack®, Bugzilla™, ControlCenter®, DevTrack® packages, plus more.

PERFORCE
SOFTWARE

Fast Software Configuration Management *www.perforce.com*

Download your free 2-user, non-expiring, full-featured copy now from www.perforce.com
Free (and friendly) technical support is on hand to answer evaluation questions.

All trademarks used herein are either the trademarks or registered trademarks of their respective owners.

Linux wish list
100 times faster worst-case response time
20 times smaller footprint
Supported by original developers
Priority inheritance
Impervious to worms, viruses & denial-of-service attacks
Total reliability, proven in flight-critical systems
Intellectual property indemnification
GNU wish list
20% smaller code
20% faster code
Full ANSI C++ conformance
Embedded C++ optimizations
MISRA C for improved reliability
Eclipse wish list
Best-in-class tools from one vendor
Supported by original developers
Simultaneous release of all tools integrated as a single package
Virtual memory aware system-level debugging
Memory leak detection
Multiple RTOS support
Code coverage analysis
Trace analysis tools
Multi-core debugging

Not even a fairy godmother could make these wishes come true

But you can get all this and more from Green Hills Software

Our **INTEGRITY**® RTOS delivers the blazing real-time performance and impenetrable security you need in addition to all the features you expect:

- memory protection
- royalty-free
- source code
- standard POSIX interfaces
- IPv6 and IPsec
- small footprint

Our **MULTI**® development environment provides a full set of best-in class, integrated tools for project management, debugging, and optimization. Add our new **TimeMachine**™ debugger and you can even go back in time to fix the most outrageously difficult bugs in minutes.

And our legendary, ANSI-compliant **Optimizing Compilers** for C, C++, and Ada 95 produce the smallest and fastest code, as proven by the industry-standard EEMBC benchmarks. GNU compatibility is so good we can even compile Linux—making it a remarkable 35% smaller than when compiled with GNU compilers!

Let us show you how to quickly develop the most reliable, most secure, highest-performance and lowest-cost products. Call 805-965-6044 ext. 201 or visit **www.ghs.com/wishes**.

Green Hills®
• SOFTWARE, INC. •

Copyright © 2003 Green Hills Software, Inc. Green Hills Software, the Green Hills logo, MULTI, and INTEGRITY are registered trademarks and TimeMachine is a trademark of Green Hills Software. All other product names are trademarks of their respective holders.

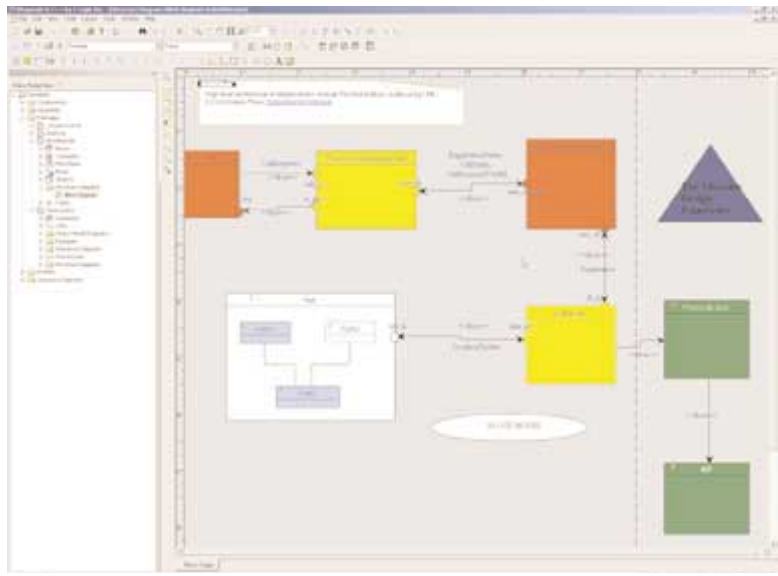
I-Logix Thinking Outside the (UML) Box

Rhapsody now generates business flow diagrams, structured C code

BY EDWARD J. CORREIA

I-Logix Inc. on March 30 released Rhapsody 2004, an overhaul of its flagship UML-based embedded development tool that the company says now permits non-UML diagrams to be integrated within the environment. I-Logix also said the tool can now generate structured C code in addition to the object-oriented code of previous versions.

"There's a large market out there that just wants to draw pictures," said Scott Niemann, Rhapsody product marketing manager, describing the reason for adding non-UML charting. "Sometimes system and software [designers] have to capture things that have nothing to do with UML. Today they go to PowerPoint and Visio to capture a high-level view and use UML to do the implementation," which he said results in a set of related documents maintained by two separate applications. "But these are pieces of the designed system that have to go with the model they're building. With Rhapsody 2004, you never have to go outside of your design environment to capture your design. You can draw anything you want, and it becomes part of your model."



Rhapsody 2004, with its new interface, permits diagrams that are not linked to code.

However, Niemann noted that Rhapsody will not generate code for non-UML portions of a diagram. "That will be the next step," he said.

Rhapsody 2004 also will for the first time generate structured C code, which Niemann said is intended to open up the product to more developers. "Most C developers do not want to write object code, so we were missing a majority of the C market." Previous Rhapsody versions produced object-based C code, Niemann said. "We tried to have traditional C developers write object-oriented code. But studying the market and talking to users and prospects, we found that the majority of embedded [C development] is being done in structured code."

Rhapsody also now includes an extensible, model-based framework, which Niemann said permits developers building mission-critical applications to more easily achieve DO-178B certification, which is required for avionics and aerospace control systems.

Available now for Windows workstations, Rhapsody 2004 pricing starts at US$1,250 per developer seat and targets most major RTOSes; the software will be a free upgrade for current Rhapsody license holders. ▮

MontaVista to Developers: All Aboard

LSP Certification Program, Board Support Toolkit bring designs in line

BY EDWARD J. CORREIA

Embedded Linux developer MontaVista Software Inc. in late March unveiled a certification program and accompanying tool set that it says will help developers verify that versions of its Linux distribution they are customizing for their embedded designs do not veer from MontaVista Linux and can be supported by the company.

Certified LSPs are suitable for deployment, says MontaVista's Lehrbaum.

Developers must build a customized version of Linux, sometimes called a Linux Support Package (LSP), for each embedded device. According to Jacob Lehrbaum, MontaVista's product manager of development tools, LSP certification will benefit not only hardware OEMs, but also enterprise developers. "A certified LSP ensures that their custom hardware is stable and suitable for deployment."

For hardware manufacturers building development platforms using MontaVista Linux, Lehrbaum claimed an added benefit. "For a wide range of system vendors that need commercial operating systems, certified designs plug into the MontaVista environment, and we can provide primary support to developer end users."

The LSP Certification Program will include a Board Support Toolkit, which Lehrbaum said delivers a range of test and verification tools for kernel features and file system protocols, along with application-level and stress tests.

BROADENS SCOPE

MontaVista also is working with development tools maker Real-Time Innovations on versions of RTI's ScopeTools for DevRocket, MontaVista's Eclipse-based IDE. A trio of new tools will add graphical debugging, memory and performance analysis tools to the environment.

Familiar to many embedded developers will be StethoScope, which according to Lori Fraleigh, director of RTI's ScopeTools business unit, has been available for VxWorks and Linux for years. "This is the first time we've taken it into the embedded Linux market." She said the graphical data monitoring tool allows developers to look at program variables during execution without having to instrument code. "Often bugs don't occur exactly when you set a breakpoint, so by allowing you to view ongoing changes to the variables while the system operates, you're going to see conditions you've never seen before."

The two remaining utilities are making their first foray into Linux development. ProfileScope is an application profiler and performance tuner that Fraleigh said "lets you understand how different processes and functions within those processes are using the CPU." MemScope helps eliminate memory leaks by identifying "when memory is allocated and never freed to help make your system more reliable."

Lehrbaum said that ScopeTools and the Board Support Toolkit were scheduled to go into beta testing this month and to be generally available by June. Pricing for ScopeTools starts at US$2,500 per developer seat; pricing for the LSP Certification Program and the Board Support Toolkit was not set at press time. ▮

ACCELERATED TO ACQUIRE UML TOOLS

BY EDWARD J. CORREIA

Accelerated Technology, the embedded systems division of EDA vendor Mentor Graphics Corp., will acquire Project Technology Inc., which develops UML tools for embedded and real-time software development. The news was announced at electronicaUSA with the Embedded Systems Conference in San Francisco in late March; financial details were not disclosed.

Project Technology's flagship product is BridgePoint, a UML-based embedded design environment for C and C++ that permits complete embedded systems to be developed directly from software models. The product will now be called Nucleus BridgePoint, after Accelerated's RTOS.

BridgePoint uses a four-phased approach to building an embedded system. First, the model is constructed using UML building blocks. Next its behavior is verified against requirements. Once verified, C or C++ code is generated and combined with any legacy code that may be present. Still at a model level, compiled code is debugged. Once ready, a final compile and build is conducted using Accelerated's embedded development tools to produce the target-specific image.

Neil Henderson, Accelerated's general manager, said the addition of a model-driven development tool gives the company an edge for the future. "The combination of high-level modeling solution and the Nucleus RTOS will change the way embedded developers design and build their products," he claimed in a statement.

Project Technology employed about 20 people, all of whom will remain in that company's Tucson, Ariz.-based offices, according to an Accelerated spokesperson. Project Technology founder Stephan Mellor has become Accelerated's chief scientist. ▮

Announcing the First

Embedded Software Development CONFERENCE

A conference for embedded software developers, engineers and managers

Embedded development has evolved to require high-level programming that focuses more on the application logic and the use of operating-system abstraction — not the bus architecture or heat sink capacities. The Embedded Software Development Conference focuses on embedded development at this application and operating-system level.

As a software developer, engineer or development manager building embedded systems aimed at connecting with the enterprise, you need technical instruction to help you bring your applications and designs to market on time and on budget.

The Embedded Software Development Conference starts with a full day of hands-on tutorials on J2ME, Windows CE, Palm OS, Embedded Linux VxWorks, Nucleus, real-time design methods and more. The next two days are packed with more than 35 technical classes featuring vital embedded programming tips and techniques for you and your team.

"Fueled by the growth of the Internet, the pervasiveness of information is driving the need to connect and share islands of information..."

— The Information Habits of Embedded Engineers, VDC, January 2004

Silicon Valley Location!

The Embedded Software Development Conference will be held at the DoubleTree Hotel, in the heart of Silicon Valley. The hotel is close to the San Jose International Airport, next to U.S. 101 and just a few blocks from I-880. The hotel provides a complimentary airport shuttle as well as ample parking. Downtown San Jose is just minutes away.

Produced by

BZ Media SD Times Software Test & Performance

Media Sponsors:

ELECTRONIC PRODUCTS Extension MEDIA EmbeddedMarket forecasters

100% Embedded Software Development

Registration Opens May 7!
Register to be notified when classes are posted at www.esdevcon.com

August 17-19, 2004
DoubleTree Hotel
San Jose, California

The Embedded Software Development Conference is brought to you by:

Ted Bahr
Ted, president of BZ Media and of the Embedded Software Development Conference, was the founder and driving force behind the Embedded Systems Conference and Embedded Systems Programming magazine. Ted is well-known as a visionary and evangelist for embedded software development.

Alan Zeichick
Alan brings more than 25 years of experience as a systems analyst, software developer and technology consultant to his role of editor-in-chief of SD Times and co-chairman of the Embedded Software Development Conference.

Edward J. Correia
One of the software development industry's most respected high-tech journalists, and a hands-on technologist, Edward has edited the Embedded & Wireless section of SD Times for more than four years. He's the go-to guy for what's happening in embedded software development, and co-chairman of the Embedded Software Development Conference.

Donna Esposito
The show director for the Embedded Software Development Conference, Donna had been vice president for electronic events at CMP Media LLC, and was responsible for managing both the Embedded Systems Conference and Embedded Systems Programming magazine.

To exhibit or become a sponsor,

Contact Donna Esposito
415-785-3419
desposito@bzmedia.com

Or Ted Bahr
516-922-2101 x101
ted@bzmedia.com

Call to reserve space today!

Check out this list of sample classes!!

Over 40 top technical tutorials and classes!

- Managing Embedded Software Development Teams
- Building Windows XP Embedded Applications
- Architecting J2ME Systems
- Debugging Embedded Linux
- Security Testing for Embedded Software
- User Interface Design for 2005
- Connecting Embedded Systems to IT Systems
- Getting Started With Palm OS
- Building Better Windows CE Systems
- Working With the Java Distributed Real-Time Spec
- Powering Your Embedded Designs With UML
- Modeling Complex Real-Time Software
- Handling Interrupts in Embedded Linux
- Synchronizing Distributed Embedded Systems
- Getting Started With BREW
- Efficient Emulation of Embedded Applications
- Selecting an Embedded Database
- Accessing the Executable Internet
- Principles of Multitasking Design
- Building Secure Embedded Systems
- Memory Management Within Embedded Linux
- Architecting Embedded Software Designs
- 9 Testing Methods for Embedded Software
- Securing Internet-based Embedded Systems
- Call and Response: Managing Remote Devices
- Managing Requirements Change
- Designing Wireless-Aware Applications
- Writing Java Code in JINI
- Improving Execution Performance in Real-Time Systems
- Principles of Queuing Theory for Embedded Design
- Using Software Components in Real-Time Systems
- Designing Bluetooth Into Embedded Systems
- Tips on Writing and Debugging Palm OS Applications
- Choosing the Right Real-Time Operating System
- Validating Your Embedded Software Designs
- 16 Better Ways to Handle Multitasking Design
- Simulating Embedded Software Designs
- Writing and Debugging BREW Applications
- Complex Real-Time Software Development With UML
- Enabling Web Services in Embedded Software Designs
- Advanced J2ME Design
- Designing for the OpenPDA Platform

Learn More Today at www.esdevcon.com

Consider the Outsource

Many things must be spelled out upfront for companies looking to maintain a high level of quality in their development projects

BY LISA MORGAN

At first glance, sending product development projects offshore appears to offer cost savings of 50 percent, 70 percent or even 90 percent on a wage-comparison basis. Of course, the savings are not usually that straightforward, as a number of technological and operational issues may arise that can affect total costs and software quality.

Although different companies may be equally interested in reducing programming-related costs, not all organizations are equally prepared to meet the challenges inherent in offshore development. Successful overseas relationships take time to plan, build and manage. And when development projects go awry or software quality suffers, customers hold the brand-name vendor accountable.

Kit Martin, vice president of technology research services at Meta Group Inc., said that the outsourcing relationship is a lot like a marriage. The difference is, there are no prenuptials—just dispute resolutions.

Building successful offshore relationships and ensuring software quality require careful planning and preparation. While it may be easy to pick up the phone or send an online query to a potential offshore partner, unprepared U.S. companies may find themselves in over their heads when the reality of offshore project management sets in, cultures clash or software development and testing methodologies fall out of sync.

Some companies have established software quality standards and documented them, which can be very helpful when managing offshore partners. However, the absence of written policies, or the failure to enforce them, can lead to unforeseen results.

The successful management of offshore development begins with an understanding of what works internally—how software requirements are defined, which software development methodology is used, how testing is done, and understanding the processes related to life-cycle management.

Martin said that companies should produce manuals and also include a description of steps, waterfall diagrams and questionnaires to identify and minimize conflicts in regard to development philosophies. There should be a statement of principles (which doesn't have to be a formal contract or service-level agreement) that describes how disputes will be resolved, how changes will be negotiated, and who will have input into the project.

He also suggested holding the offshore partner responsible for staff turnover by reserving the right to put the company on probation if staff reliability becomes an issue.

DIFFERENT COUNTRIES, DIFFERENT VALUE PROPOSITIONS

Location	Selling point(s)
Canada	Close proximity to U.S. Similar culture
India	Low cost Quality Educational and software infrastructure
Israel	Security products
Philippines	Low cost

Source: The Yankee Group

CHOOSE PARTNERS CAREFULLY

Research firm IDC recently conducted a survey of approximately 25 companies that attempted to ascertain how they identify international development partners, among other things. Thirty percent to 40 percent of respondents said they turn to consulting partners. Lesser percentages said they rely on companies with which they have worked previously or recommendations from partners, vendors, internal managers or industry analyst firms. Not one company interviewed was using the Web to find partners.

David Tapper, a senior analyst at IDC, suggested that when companies seriously want to engage an offshore development partner, they should conduct an on-site visit. Software developers should meet with the management staff, observe actual operations, make note of human and technology resources, and pay attention to the development methodologies used.

U.S. companies should also consider whether the potential partner's team is large enough and sophisticated enough, and possesses the requisite expertise needed for the particular project. In addition, software quality assurance practices should be reviewed to determine not only what exists, but also whether the potential partner is capable of meeting the developer's standards for software quality.

Some analysts suggest interviewing individual developers who would be on the team, which may or may not be practical. If a dedicated team has not yet been defined, it may not be cost-effective to interview all 500 developers at the India location, for example.

FOCUS ON PROJECT MANAGEMENT

Some companies are able to meet incredible time-to-market deadlines by employing developers around the globe in different time zones, so a typical development day is literally 24 hours. Regardless of how many time zones may be involved, software developers are in a better position today to manage overseas relationships by virtue of new collaborative technologies and the falling prices of bandwidth.

Although virtual presence eases the ability to communicate, there are still several barriers that companies must

CATEGORICAL DENIAL OF JOBS

Number of U.S. jobs moving offshore by job category, 2000 to 2015

	2000	2005	2010	2015
Management	0	37,477	117,835	288,281
Business	10,787	61,252	161,722	348,028
Computer	27,171	108,991	276,954	472,632
Architecture	3,498	32,302	83,237	184,347
Life Sciences	0	3,677	14,478	36,770
Legal	1,793	14,220	34,673	74,642
Art, Design	818	5,576	13,846	29,639
Sales	4,619	29,064	97,321	226,564
Office	53,987	295,034	791,034	1,659,310
Total number of U.S. jobs going offshore	**102,674**	**587,592**	**1,591,101**	**3,320,213**

(Numbers have been rounded.) *Source: U.S. Department of Labor and Forrester Research Inc.*

overcome to successfully manage international development partners. If establishing a local office is not practical, it may well be worth the price of plane tickets and hotel rooms to ensure that a U.S. project manager can oversee the project, if not on an ongoing basis, on a periodic basis.

More sophisticated organizations are cross-training, so that team members from both sides become familiar with each other's operations, culture, local laws, customs and languages. In some cases, members of the offshore partner's management team will be flown to the U.S. company's office, also for cross-cultural training purposes. According to Frances Karamouzis, a research director at Gartner Inc., such cross-pollination enables more effective project management and lowers communication barriers.

"It pays to have 35 people come to the U.S. to establish protocols and operating norms, as well as processes for bug fixes, regression and unit testing," said Karamouzis. "Once there is an agreement on the overall design, that team can go back and lead the team of programmers."

IDC's Tapper agreed, adding that companies should ideally rotate staffs between the developer's U.S. headquarters and the offshore partner's location, as well as regularly check the status of testing and provide feedback on that status.

COSTS VS. TOTAL COSTS

Flying personnel from one side of the globe to the other and paying for hotels and other expenses tend to erode the dramatic cost savings one may have seen initially on paper. Although the cost of a foreign developer may seem like a mere fraction of the cost of an American developer, the cost of management adds to the total cost, often eroding expected savings.

SoftAuspicious Co. Ltd., a contract development firm in China that offers consulting, systems integration and application development services, advertises savings of 50 percent to 80 percent below U.S. costs for the same services. However, as discussed later in this article, outsourcing to organizations in China, generally speaking, may pose challenges specifically in regard to intellectual property use and distribution.

Regardless of where a company may be located, there is the cost of vendor governance, which "should" run somewhere between 5 percent and 7 percent, according to Andrew Efstathiou, program manager for The Yankee Group's technology management strategies.

It is important to ensure that projects are on track, on time and on budget, but it is equally important to ascertain whether regulatory compliance is being satisfied and other standards are being met.

Outsourcing also requires investments in software and infrastructure that some companies may overlook. There are software licensing and maintenance fees to consider, as well as network access, security policy enforcement, audits and other business controls.

Flashline Inc. is addressing the governance issue directly with its newly announced FlashPack for Outsourcing, which controls asset use and enables collaboration between development teams. The product helps companies avoid unforeseen costs incurred when development and testing methodologies, philosophies and the use of tools differ. It provides for accountability between Requests for Proposals and Statements of Work and the actual projects delivered.

RESOLVING DIFFERENCES

Some analysts claim that the Capability Maturity Model (CMM), which measures the maturity of software development and maintenance practices, can help U.S. companies and their partners overcome their differences. However, Gartner's Karamouzis pointed out that CMM only measures the process; it does not imply the use of the same methodology. Thus, software development and testing methodologies should be established upfront in writing, so they can be enforced as the project unfolds.

Language and cultural differences also can make project execution more difficult. For example, Karamouzis said that although the literacy rate of a country such as India may be high, challenges can arise from the use of slang and other implied requirements. Thus, U.S. companies can find themselves facing a "plateau of productivity."

"Cultural differences can be a significant issue," said Yankee Group's Efstathiou. "India does excellent technology work, but sometimes when a U.S. project leader turns over a project, the end result is good but not what [the U.S. company] had asked for."

Java may be Java in any language, but it is sometimes the side comments that can throw off international part-

▸ continued on page 30

WHAT TO CONSIDER

Analysts agree the following points should be investigated to control quality and costs:

- Solid management and development teams
- Developer education, experience and subject expertise
- Software development and testing methodologies
- Infrastructure
- Security policies and practices
- Reputation and past performance
- Financial stability
- CMM certification
- Disaster recovery capability
- Local regulations and laws
- Cultural alignment
- Language barriers
- Customer base
- Labor costs

Are U.S. Developers at Risk?

BY LISA MORGAN

Forrester Research Inc. estimates that over the next 15 years, 3.3 million U.S. service-industry jobs and US$136 billion in wages will move offshore, an unstated percentage of which concerns software developers. American politicians and a growing number of U.S. citizens are becoming concerned about the issue. Is America outsourcing its economy, or is the trend toward outsourcing just a symptom of globalization? Either way, what does that mean to developers?

Gartner's Karamouzis predicts some U.S. software developers will need retraining.

Over the past decade, U.S. companies have been complaining that there are not enough qualified developers. So, colleges have stepped up their recruitment and educational programs, while companies have invested in J2EE and .NET training, among other things. American workers from other industries have attempted to cash in on the developer availability crisis, and a number of software development firms have been recruiting them, if not training them.

In the meantime, other countries have not been resting on their laurels. They have retooled their own university systems and recalibrated their own economies to support new breeds of developers and other high-technology workers. The result is an exploding market of software developers, a growing number of whom do not reside on U.S. soil. According to Forrester, India alone produces 250,000 IT program graduates per year.

Non-U.S. developers tend to be much cheaper to hire than U.S. developers, which is why American companies are increasingly hiring them. Does that imply that American developers are overpaid or that their value is shifting? From a global perspective, the answer may be yes to both.

Then there is quality. American developers would like to believe that they are the brightest and most innovative available, and yet there are a number of Canadian, Indian, Israeli and Russian companies that sell very solid products in the U.S. It could be argued that at least some of the software products are "me too" followers of U.S. innovators, but it is unlikely that American innovation solely will prevail over time if other products such as computers, automobiles and home entertainment systems are any indication.

This is an important point, because it is the evolution of outsourcing overseas that fuels the notion that it is "bad."

Historically, it has been the production jobs that found their way overseas—low-paid, highly manual tasks typically performed by workers who are not college-educated. Now, white-collar jobs also are migrating overseas—knowledge-based jobs typically done by the college-educated, such as software engineering. For U.S. developers, this means "moving up the stack" from programming to systems design and analysis, according to Andrew Efstathiou, program manager for The Yankee Group's technology management strategies.

GLOBAL LOAD-BALANCING

When production jobs migrated overseas, U.S. production workers had to be retrained. Frances Karamouzis, a research director at Gartner Inc., predicts that the same fate will befall at least some American software developers, meaning that the definition of "value" and "competitiveness" will change.

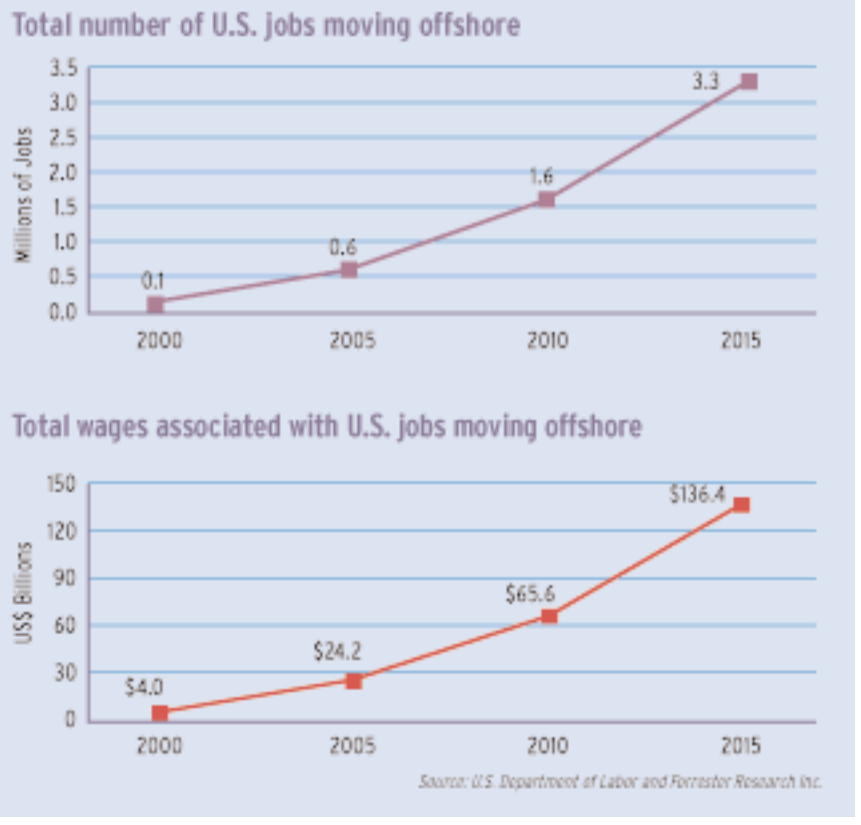
As the United States is forced to move up the food chain once again, other countries will begin competing on a number of different levels, from fundamental software testing to complex software design. The lowest-level functions will conceivably be outsourced to countries with the cheapest labor, while more sophisticated tasks will be exported to countries that have trained higher-level workers.

Thus, U.S. companies seeking offshore partners may choose partners in various countries for different tasks based on their respective strengths—one for testing, one for maintenance, one for initial product development and so on. Yankee Group's Efstathiou called this "geographic expertise."

This global load-balancing approach to software development is logical and highly efficient, but it is anything but static, according to analysts. As more countries develop software expertise, the economic balance will continue to shift. Any country could lose its competitive advantage to another based on cost, quality, expertise or shifting market requirements.

During the past decade, the rise of online collaborative capabilities coupled with the falling price of bandwidth helped kick-start the global economy. For competitive reasons, it's up to U.S. companies to stay one step ahead. ▮

SOMEWHERE BEYOND THE SEA



OUTSOURCE

◂ continued from page 29

ners. For example, foreign individuals may understand a U.S. company's philosophy about change management, transaction handling and life-cycle management, but they may be confused by statements such as "Dude, we are so not building this right." In addition to minimizing colloquialisms, it is important to take into account the person being addressed in a communication—an executive will need different information than a software engineer needs, for example.

MANAGING IP RISKS

Then there are local laws to consider. Compared with most countries, the U.S. has superior intellectual property laws that protect developers. In countries such as China, IP laws are virtually nonexistent, several analysts said. Other countries fall somewhere in between.

Outsourcing development to the wrong offshore partner may well prove to be more costly than imagined. And even if laws do exist, U.S. developers may be completely unaware of them because they have not retained local attorneys. Moreover, the company the project was outsourced to may fail to have the expected safeguards in place, which enables individual developers to misappropriate IP.

"You need to understand jurisdiction and local laws, otherwise how are you going to file a suit?" said Meta Group's Martin. "[IP misappropriation] is going to happen. You need to have policy and legal controls in place."

Some analysts say that as long as the source code stays in the U.S., American vendors have little to worry about. Others underscore the fact that U.S. companies bear the burden of protecting that which they own regardless of where the source code resides. Analysts recommend running background checks on foreign partners and their employees as part of the due diligence phase. Clearly, the quality of workers will have a direct effect on the quality of the software development project outcome.

One way to attempt to mitigate business risks and ensure better software quality is to establish a formal partnership with the offshore partner using a risk/reward model. Yankee Group's Efstathiou said companies may want to evolve their relationships over 10 or 15 years, perhaps beginning the relationship as a customer, then attempting a joint venture, and finally acquiring the company as a fully owned subsidiary, as IBM does.

BOTTOM LINE

Avoid being seduced by numbers on paper. Outsourcing development to offshore partners may save a few dollars in the short term, but the long-term effects should be considered as well.

Companies not already familiar with the actual costs and complexity of outsourcing should query knowledgeable sources to get an idea of the actual resources required to make the relationship work and to more accurately determine what the total costs likely will be.

Effective product management will help ensure that software quality doesn't get lost in translation. ▮

www.altova.com

xmlspy® 2004

Uncover incomparable utility:

Dependable Code Generation Capabilities

Extensive Database Connectivity

Practical XML Differencing Engine

xmlspy® mapforce® authentic® stylevision®

*Take a look at **xmlspy®** 2004, the industry leading XML development tool from Altova! Try out the built-in code generator that frees software developers from writing low level code and enables them to focus on achieving their project goals. With **xmlspy** 2004 developers can easily define XML schemas and construct XML documents, then automatically generate reliable Java, C++ or C# runtime code. See for yourself how **xmlspy** 2004 saves time, improves quality, builds productivity, and accelerates development projects. **Download xmlspy® 2004 today: www.altova.com***

ALTOVA®

www.altova.com

EDITORIAL

Issue of the Century

Four years and 100 issues ago, BZ Media brought forth upon this industry a new publication, dedicated to the proposition that software development managers require context, in the form of timely news, opinion and analysis, in order to better adapt to and accommodate the fast-moving changes to technologies and business requirements.

It would not be valid to compare today's software development industry to the national turmoil that inspired Abraham Lincoln's Gettysburg Address. However, a brief look back at the first issue of SD Times, from February 2000, does reveal interesting changes.

At the time of that premiere issue, Sun Microsystems Inc. was unveiling Java 2 Micro Edition, its vision of slimmed-down Java technology targeted at Internet appliances. Remember Internet appliances? That phrase is long since defunct, but today J2ME is alive and well in handheld and telephone devices, as well as in traditional embedded systems.

A cover story cited an XML alliance between two at-that-time leading vendors, eXcelon Corp. and CSI USA. Both companies are gone, as are many other technology providers covered in that first issue, such as Tower Technology Corp. and Be Inc., either as victims of the recent recessions or as fodder for mergers and acquisitions.

Compuware Corp., another cover-story company, continues to thrive, and has broadened and strengthened its product line. By contrast, Sun, whose J2ME was the subject of our premiere issue's third cover story, has been battered by the economic downturn and by a slowdown in its big-iron hardware sales. Four years ago, Sun was a hardware company with Java; today, it's a software company with hardware.

Other companies are still around, though their names or owners have changed. In February 2000, we wrote about Inprise Corp.; today, the firm has returned to its original name, Borland. Metrowerks Corp. was an independent company; today, it's part of Motorola.

But more than companies have changed; so have fundamental technologies and business outlook. Four years ago, XML was still a novelty and Web services weren't on the radar. SCO wasn't suing Linux users, and many of Microsoft's antitrust battles were yet to be fought. We were still coping with the aftermath of Y2K hype, and U.S. Rep. Michael Oxley, R-Ohio, and Sen. Paul Sarbanes, D-Md., had not yet written their corporate accountability law.

Oracle hadn't tried to buy PeopleSoft. People still talked admiringly of the application service provider market. Outsourcing meant manufacturing, not offshore software development. Indeed, a Guest View from Metrowerks then-CEO David Perkins decried the lack of qualified programmers. Development managers in the United States were more concerned with H1-B visas than with offshoring.

And that's only within four years and 100 issues of SD Times. How will the landscape have changed over the next four years, or by the newspaper's 10th anniversary? It would be reasonable to assume that the changes will be substantial. We'll be there to chronicle the events, and to provide the news, opinion and analysis needed to put it all in context. ▮

GUEST VIEW

FORTRAN MATTERS

Fortran 2003, a bit of a misnomer perhaps, arrives in 2004. However, in a world dominated by Java, Visual Basic, C/C++ and C#, many of which have decent numerical computing capabilities, you might ask whether anyone who doesn't have a huge base of Fortran code should care about the new generation of Fortran. Indeed you should. Here's why.

The nature of today's computing challenges, and the direction in which many commercial and research areas are moving, is in taking on more complicated problems that involve far more code. When you add to the complexity of problems, the various languages with numeric computing capabilities do not rise to the tasks at hand equally. For many numeric computational problems, Fortran and C are comparable when it comes to computational speed. However, from the numeric point of view, Fortran is inherently safer for certain operations, as compared with C. Fortran's key focus is on highly dependable numerical facilities. If one is equally familiar with computing in any of these languages, and more or less language-neutral in orientation, one commonly concludes that Fortran is the superior alternative.

TIME FOR ANOTHER LOOK

If your last look at Fortran was in the days of Fortran 77, the choice of Fortran for new code may not be apparent. At that time, old-fashioned Fortran was not differentiated from the other numeric computing languages in this regard. With the advent of Fortran 95, the paths of the languages began to significantly diverge in terms of which were well suited for complex problems. Fortran 2003 is better still.

Indeed, when computing problems involve layers of data abstraction, Fortran 2003 is especially well supported for such challenges, a claim that none of the other languages can make.

Unlike C++, which requires one to do a lot of work with it to learn how to write code well, writing Fortran code is relatively straightforward. Fortran has much better support for detecting errors, and it does not give you as much rope to hang yourself with as other languages do.

Efficient code can be especially elusive in the other numeric computing languages, compared with Fortran. You might be able to get the same efficiency with C or C++, but it will need a lot of work to get there. In particular, they allow aliasing, which makes it harder for a compiler to optimize code. Moreover, whenever problems require array processing, Fortran is clearly better than all the other languages, and especially with the advent of the new Fortran 2003 standard.

MALCOLM COHEN

In reality, any attempt to make one language the ultimate solution misses the far greater opportunities one can derive from building multilanguage applications that utilize the forte of each language scheme. The superiority of Java front ends for many commercial applications is widely recognized, in that it is heads above the other languages in bringing nontechnical users seamlessly into a computing engine. However, if you have numerically intensive computational tasks, Java will hinder you with a 3x-to-10x performance hit.

In fact, the trend to build multilanguage operations was very much a front-of-mind concern to the Fortran 2003 standards committee, which put a great emphasis on extending support for other languages into the new standard. For example, the new Fortran has many features that make it easier to join C programs and Fortran programs together, including support for reading and writing files written in C that are read in Fortran as stream files.

When, then, would you include Fortran code in an optimal multilanguage application? Often, when you are handling problems with massive amounts of data, or if you are performing simulation exercises that generate enormous datasets, whatever front ends are in place are best complemented by Fortran as the accompanying numerical workhorse. Handling huge amounts of data has *always* been a driving factor in the development of the language. If an array processing type approach better matches the computational problem than a pure object-oriented programming (OOP) approach, Fortran would be the better option.

Conversely, if the problem were a better match for advanced OOP techniques, C++ would be a better choice.

LANGUAGE NEUTRALITY

There are good reasons why C language programming has become predominant. In Unix systems, all the systems calls are written in C and many other software packages with GUIs have a C interface without provisions for other languages. But, frankly, a far greater source of C's popularity is that it is *the* language that post-baby-boomers learned in college. Educational institutions may have done today's programmers a disservice by not building student expertise in a number of languages such that the pros and cons of each language could be better appreciated.

The developers of the recent Fortran standard were very focused on ensuring that the Fortran 2003 revamp would make it more compatible with an object-oriented approach that did not go overboard in this direction. In fact, C++ was a model of what *not* to do. For example, Fortran 2003 avoids multiple inheritance, because it adds too much complexity for too little gain in expressive power. Likewise, Fortran's unique ability to handle massive datasets and array processing was kept intact by rejecting the tactic of making everything a polymorphic object, as in other languages.

Indeed, there may be lag in perception of Fortran's role in the software developer community compared with the reality of how widespread that role truly is. Our theoretical projections of why Fortran would grow in importance in future years (i.e., driven by rapidly growing datasets and comparable growth in computing complexity) now must adjust sights to the reality of the nascent trend already taken root. There seems to be far greater demand for Fortran products than the existence of legacy code alone is likely to explain.

Look for other language standards committees to follow suit in years to come in making multilanguage applications far more practical. ▮

Malcolm Cohen is principal technical consultant for Numerical Algorithms Group Ltd.

AND ANOTHER THING...

BORING IS BETTER

Sisyphus is tired. Over the past half-decade, there was the big corporate and professional push to jump onto the fast-moving dot-com train—even while it seemed to be heading for a crash. Pushing to fix Y2K defects, or to convince top management that the company's data systems were safe. More dot-com pushing. Faster, faster!

It was exhausting but exciting. It's been the ride of a lifetime, as we kept chasing The Next Big Thing. Java. XML. Linux. All framed by insane valuations, stock options and other artifacts of the dot-com madness. And then came the inevitable crash, followed by successive attempts to create The Next Next Big Thing. The hype-driven peak for each new technology (wireless, Web services and even now business integration) was lower, while the dissipation of each new breakthrough concept came faster and was more complete. Like a wave racing to shore, crashing, then spilling back into the sea, these technologies didn't go away—they just came back with a quieter presence and as part of all that has gone before.

Today's more boring landscape is good because it keeps us from falling over the Bleeding Edge of unproven innovation and paid analyst-driven hype. Talk to me after your technology has been tested, integrated and banged around for a few years, we're now saying. That's a healthier attitude, because we can get back to business: getting legacy systems Web-worthy, making systems work together, simplifying and componentizing development projects to deliver workable systems sooner. We've learned how to truly demonstrate ROI. CEOs have learned the value of what we do. It's back to basics—even training the staff that's not outsourced.

Into the tumultuous environment of the past four years, SD Times was born, on Feb. 23, 2000. Today, you are holding the 100th issue of our newspaper. Like many new technologies and products, we too have been tested, integrated and banged around; the result, we hope, is that SD Times has become a pleasant and valuable asset to your work life. The response from our readers has been gratifying, and we hope to keep earning your respect and attention.

TED BAHR

THE SELF-SERVICE EVOLUTION

Of course, none of us—whether software developers or newspaper publishers—can sit back and relax, even in these slightly more boring times. There is still innovation, as well as emerging technologies, needs and challenges in our business.

Outsourcing appears to be the big scourge of the moment, at least for many U.S. companies, but many projects will backfire and the outsourcing wave will not lead to a dramatic death of the American programmer. The Sarbanes-Oxley act is calling on us to update, connect and verify our company's systems, but a governmental slap on the wrist just doesn't have the same terror factor as the media-fed frenzy of elevators failing on New Year's Day in 2000. Revolution is crazy and fun, but steady evolution is a lot more manageable.

A key element of the technology evolution is an increase in self-service applications. More and more, Web-based applications are a company's outward face to customers. Where we used to complain about in-flight service, we now complain about preflight airline Web sites that don't let you use your miles to upgrade your seat after you've bought a ticket (or, better yet, to check upgrade availability before booking the seat). The pressure is on to make these applications perform properly—and get the details right—rather than dreaming up the next off-the-wall Internet Business Model.

Perhaps future developments will improve convenience and personal productivity. Have you noticed that there's no time for anything anymore? I probably spend at least two hours a day every day deleting spam, or returning or writing messages that are probably unnecessary. Do I have two hours a day to sacrifice to this? No! It has just pushed aside all the other things that occupy a day, including talking with real people, playing with my kids, exercising, eating lunch away from my desk, listening to customers…. But I digress.

Make it simpler, make it easier, make it faster. There's plenty of room for improvement—the self-service evolution has barely begun. Five years ago, when I moved from San Francisco back to New York, one odd difference was the culture of self-serve gasoline. In California, I'd never have gone to full service—I'll fill the tank myself, thank you, no human interaction necessary. In New York, self-serve was just beginning to come into use, but today, New Yorkers are being converted. The trend to do-it-yourself without interacting with other people is overwhelming— just look at airline tickets and automated credit-card readers right at the gas pump. How about automated supermarket checkout lines? It's only been a year since these came to New York, and already 25 percent of groceries are passing through these lanes, unencumbered by friendly smiles of a cashier.

Most of the world still hasn't discovered the convenience of online shopping. Know what you want? Why go to the mall or to a big-box discounter when you can hit a few keys and have the goods delivered to your house before the end of the week? Demands on these Web-based systems are going to grow very fast, and the performance and reliability of these programs will make or break companies.

We are in an age of Realistic Expectations and must deliver on them. It means improving performance of what is rather than dreaming of what could be. Software design and development issues are now being framed in terms of functional and unit testing and performance of those systems—not the other way around. At BZ Media, we've launched Software Test & Performance magazine (www.stpmag.com) to help you address those projects under development that just aren't working right—or could work better. Just because times are more boring doesn't mean nothing is happening. Things are speeding up for us, too. ■

Ted Bahr is publisher of SD Times.

LETTERS TO THE EDITOR

ENOUGH VENDOR 'SPIN'

I'm the author of O'Reilly's "Building Embedded Linux Systems."

I read your article ["Should Embedded Linux Be Standardized?" March 1, page 26, or at www.sdtimes.com/news/097/special1.htm], and I think the article makes a few assumptions common to the trade press's discussion of "embedded Linux." Mainly, it doesn't ask anyone in the Linux community about what they think, and relies almost entirely on the comments of vendors, who it must be said have only a marginal effect on Linux's direction.

I would invite you to read two articles I wrote last May and June about similar issues, which provide good insight into the Linux development community's role in all of this: www.linuxdevcenter.com/pub/a/linux/2003/05/12/embedlinux.html and www.linuxdevcenter.com/pub/a/linux/2003/06/09/embedlinux.html.

Karim Yaghmour

WAITING FOR MOBILITY

I, too, am really tired of the endless delays. David Morse is right ["Waiting for Mobile Java.SQL," Feb. 1, page 24, or at www.sdtimes.com/opinions/guestview_095.htm]. We should have had a data-centric world already deployed in its third generation across the mobile platform by now.

Just like Microsoft didn't release Windows XP until Intel had a chance to catch up (and blew it—the day the benchmarks came out was the day Microsoft put up the 64-bit Windows XP beta for AMD's processors only).

I've almost given up—the IT world of recent has become as bad, with their back-room pork-barreling, as the government.

David Fitzgerald

CORRECTION

The edit and continue feature being built into Microsoft's Visual Studio 2005 (formerly called "Whidbey") will allow developers to fix bugs and continue testing without rebuilding their applications. An article in the March 15 issue misstated what this feature can do.

SD Times
Software Development Times
April 15, 2004 – Issue No. 100

Publisher
Ted Bahr
+1-516-922-2101 x101 • ted@bzmedia.com

Editor-in-Chief
Alan Zeichick
+1-650-359-4763 • alan@bzmedia.com

Editor
David Rubinstein
+1-516-922-2101 x105 • drubinstein@bzmedia.com

Senior News Editors
Edward J. Correia
+1-516-922-2101 x100 • ecorreia@bzmedia.com
Jennifer deJong
jdejong@bzmedia.com

Associate News Editor
Yvonne L. Lee
+1-408-255-1153 • ylee@bzmedia.com

Copy Chief
Patricia Sarica
+1-516-922-2101 x106 • psarica@bzmedia.com

Art Director
Mara Leonardi
+1-516-922-2101 x109 • mleonardi@bzmedia.com

Art/Production Specialist
LuAnn Palazzo
+1-516-922-2101 x116 • lpalazzo@bzmedia.com

Columnists
Andrew Binstock
abinstock@pacificdataworks.com
Larry O'Brien
larryo@thinkingin.net
Steven J. Vaughan-Nichols
sjvn@vna1.com

Contributing Writers
Alyson Behr
abehr@behrcomm.com
Lisa Morgan
lisamorgan@mindspring.com
Oliver Rist
orist@fb2corp.com
Esther Schindler
esther@bitranch.com

Advertising Sales Representatives
Southwest U.S.
Julie Fountain
+1-831-476-1716 • jfountain@bzmedia.com
Northeast/North Central U.S./Canada
David Karp
+1-516-922-5253 • dkarp@bzmedia.com
Northwest U.S./Canada
Paula F. Miller
+1-925-831-3803 • pmiller@bzmedia.com
Southeast U.S./Europe
Jonathan Sawyer
+1-603-924-4489 • jsawyer@bzmedia.com

Director of Circulation & Manufacturing
Rebecca Pappas
+1-516-922-1818 • rpappas@bzmedia.com
Circulation Assistant
Advertising Traffic
Phyllis Oakes
+1-516-922-2287 • poakes@bzmedia.com
Office Manager/Marketing
Cathy Zimmermann
+1-516-922-2101 x108 • czimmermann@bzmedia.com
Customer Service/Subscriptions
+1-866-254-0110 • service@bzmedia.com

Accounting
Viena Isaray
accounting@bzmedia.com

Article Reprints
Lisa Abelson • Lisa Abelson & Co.
+1-516-379-7097 • fax +1-516-379-3603
lisa@abelsonreprints.com

BZ Media
BPA

President
Ted Bahr
Executive Vice President
Alan Zeichick

BZ Media LLC
2 East Main Street
Oyster Bay, NY 11771
+1-516-922-2101 • fax +1-516-922-1822
www.bzmedia.com • info@bzmedia.com

What do these companies all have in common?

Desaware
www.desaware.com

Atalasoft

codejocksoftware

DART

ComponentOne

CYBERAKT

VELOCITIS

AccuSoft

DATA DYNAMICS

Syncfusion

Dundas

AMYUNI Technologies

janus systems

PEGASUS IMAGING CORPORATION

comdit

XFEEd

Northwoods SOFTWARE CORPORATION

Alphora

DBi

Infragistics

Sax.net

FMS

COMPUWARE.

GigaSoft

mabry

SoftwareFX
Any Chart, Anywhere!

FarPoint

LEAD TECHNOLOGIES

software

telerik

They've already written code for your next project.

The Component Vendor Consortium is an association of the top 40 component and tool software publishers in the world. Combined, they bring to the market more than 300 products representing millions of lines of reusable code. Before you start your next software development project keep in mind that there is a good chance that some of the functionality required by your project is already written and available in their highly tested and optimized commercial components and tools.

Sponsored by:

Component Vendor Consortium
www.components.org

Microsoft

FTP

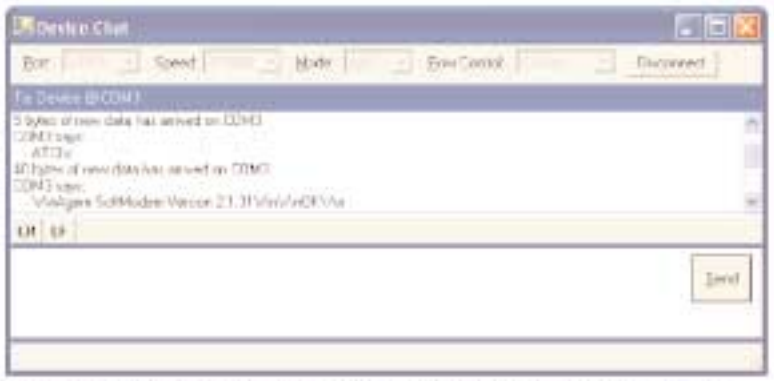
CMP

SD Times

Component of the Month

Device and Modem Communications Made Easy

Even in the age of the Internet, it's surprising how many systems still depend on serial communications. Devices that use serial ports to interface with computers exist everywhere around us. In addition, viruses and worms remain a constant threat to any TCP/IP based system. That's why banks and other companies have disaster recovery plans in place that rely on modems and regular phone lines to transfer data reliably in case of a widespread attack.



Get Connected – Sax.net CommStudio helps your Windows Forms applications talk to any device that has a serial port interface.

Sax.net, a founding member of the CVC, has been a pioneer in serial communications for more than ten years. The company wrote part of the communications API in Windows 95 and developed the MSComm control that shipped as part of Visual Basic 2.0. Since then, thousands of companies have built and deployed mission-critical applications using Sax.net's award-winning communications components.

Sax.net CommStudio, the company's flagship product, extends Microsoft Visual Studio .NET with the tools that developers need to quickly build connected applications. Using fully managed components, applications can connect to other systems and devices using serial ports, modems,and infrared or Bluetooth connections.

Integrated debugging tools make it easy to diagnose problems. As a Microsoft Visual Studio .NET Integration Partner, Sax.net works constantly to increase developer productivity and make it easier to build robust communications applications for the Microsoft .NET Framework.

Dave Quigley
Executive Director, Component Vendor Consortium

Sax.net CommStudio

Sax.net
Web: www.Sax.net/CommStudio
Phone: 1-800-645-3729 or (541) 344-2235
Quick Facts: Native .NET and ActiveX components for serial port and modem access. Supports common file transfer protocols. Includes integrated debugging and analysis tools.

Optimized for Visual Studio.net

Sax.net CommStudio™

SLIPPERY WHEN .NET

WINDOWS & .NET WATCH

LARRY O'BRIEN

The "Whidbey" version of Visual Studio .NET has officially slipped its delivery from the second half of 2004 to the first half of 2005. A new beta cycle will be inserted between now and the final release, making it hard to be optimistic that "first half of 2005" will mean anything in the first quarter. The product is too far down the chute for any amount of whining to make a difference in schedule, and companies making public comments about the delay have stoically denied anything more than mild disappointment. Well, I'll admit to being ticked off.

In print, the most common reaction to the slip was, "Well, everyone hesitates to upgrade anyway." It's enlightening to compare that with the more frustrated online reaction, where individuals and entrepreneurs are comparatively louder. Companies visible enough to get called for a pull-quote don't typically try to ride the coattails of a Microsoft release, but small companies sure do, and I doubt I'm the only person who's regretting decisions based on the belief that ASP.NET 2.0 would ship sooner rather than later.

Attendees of last October's Professional Developers Conference were given a Whidbey technology preview that included a beta of a highly capable C# 2.0 compiler. In the past six months, many of us have gotten a taste of long-yearned-for language features such as generics, which allow for strongly typed collection classes. To be subjected to another year of runtime casting errors is frustrating.

VS.NET 2005 (as Microsoft now prefers to refer to Whidbey) is, in the words of Microsoft's Tom Rizzo, "tied at the hip" to SQL Server 2005 (née "Yukon"), and early reaction to the slip announcement focused on Whidbey versus Yukon (I'll admit to blurting out an opinion on that myself). But playing a blame game at the product level is both unproductive and unenlightening. VS.NET is a conglomeration of technologies—four Microsoft languages (C++, C#, VB.NET and J#), ASP.NET, the IDE itself and a host of supporting components.

SQL Server 2005 is, arguably, a more unified technology, but I'd wager that it has modules whose individual complexities are as daunting as any compiler's. Now let's throw in two other complicating factors: the .NET Common Language Runtime and 64-bit computing.

Quite separate from any individual language or feature, the Whidbey/Yukon releases are dependent on the CLR making its first major upgrade. Generics are implemented in the CLR, so the fact that the C# compiler handed out at the PDC handles their syntax with aplomb is hardly the end of the story. There is no question but that generics will be among the most broadly used features of the CLR, so their implementation must be bulletproof.

The other aspect of the CLR upgrade that is critical is support for 64-bit systems. Just as it's clear that generics must be bulletproof to satisfy programmers, it's clear that databases must run fast and flawlessly on machines sporting 8GB or more of RAM. And yet, today's CLRs (1.0 and 1.1) not only don't support 64-bits, they don't even run in the Win32-on-Win64 emulation layer (WoW64). According to Microsoft's Chris Brown, "Our plan of record is to release [as part of Whidbey] a combined redistributable, containing both 32-bit components for execution in WoW64 and 64-bit components for execution in native 64-bit processes."

Now let's close the loop: These new CLRs must be hostable within Yukon. This introduces a whole grab bag of new complexity in and of itself requiring changes in memory management, threading, IO, managed/unmanaged transitions, assembly resolution…you name it.

In short, Microsoft has committed itself to tackling a wildly complex set of problems in one release that is, in reality, a coordinated release of many separate components. The release schedule will be determined by the most intractable component, whatever that turns out to be. In the meantime, other components that have reached production quality will be kept from broad availability. (Sure, the polish of an extra beta will show, but many people would trade that for an earlier delivery.)

Could this Gordian knot of complexity be cut? Perhaps not. Perhaps it is the case that the technologies are so intertwined, that they simply must move forward in lockstep.

When thinking about best practices in software development and Microsoft, the most striking thing is that Microsoft's release cycles are getting longer, not shorter. Although the vast majority of "agile" writing has focused on in-house and Web development, not the development of shrink-wrapped software, I can't help but think that there's a lesson to be learned. Not a technical lesson, necessarily: Internally, Microsoft practices many agile techniques—it continually compiles its own codebase with its in-development compilers (resulting in, I imagine, the world's largest continuous integration and testing process).

I think that it behooves Microsoft, and all those who ship complex systems, to develop new distribution phases that break free from the linear model of alpha, beta, release. Even with the additions of "widespread beta" and "public betas" and "service packs," that model of features blooming in synchrony and coaxing open the checkbooks is becoming less and less compelling. It's led to trouble with Whidbey/Yukon, and compared with "Longhorn," Visual Studio .NET 2005 and SQL Server 2005 will be a piece of cake. ▮

Larry O'Brien is an independent technology consultant and analyst, and the founding editor of Software Development Magazine.

THE OTHER SIDE OF XML

INTEGRATION WATCH

ANDREW BINSTOCK

One consequence of the popularity of Web services and service-oriented architecture (SOA) is that XML has become a wildly popular data format. Today, it seems, if you're writing new apps that don't store data in XML, you're so far out of the technology mainstream that you might as well be using packed decimals from COBOL. This pervasive adoption of XML, I believe, credits it with too much capability and woefully underestimates how difficult it is to use.

Let's start at the beginning: XML is easy to understand. However, as with most things that are easy to understand, the simplicity masks a progressive complexity, which appears when you want to do useful things. This complexity is delivered in the form of extensions that fill out the capabilities missing in the original simple specification.

Such extensions cannot resolve all limitations, and so incongruities persist in XML. For example, while XML is good at representing structured data—data in which all fields are cohesive, discrete entities that can be placed in a hierarchy—it does a terrible job with other kinds of data. This is because XML cannot represent data that requires tags to overlap.

Suppose you have a document that you want to mark up using XML. Suppose you want the first two-thirds of the paragraph to be bold and the last two-thirds to be italic (meaning that the middle third will be italic and bold). Because XML requires a tag to be closed before another tag of the same order opens, you cannot frame the bold portion with a pair of tags and the italic section with another pair, because these tags will overlap. The data is unstructured and, as a result, XML cannot express it without kludge workarounds. Using native formats, of course, the solution is trivial: Turn italics on until you see a marker that says turn it off. Done.

This limitation is masked by virtue of the fact that most business data is structured. However, the following problem cannot be easily hidden: XML is difficult to process well. Anyone who has used DOM or SAX knows this. To access XML through these standard interfaces, you must employ a data model that is far different from those used in reading and writing simple binary data. In fact, parsing can become incredibly complex, even for simple tasks. If you go one step further and attempt to perform validation of a document via schemas or DTDs, you have moved completely into the province of specialists. As a result, a lot of XML is not verified—only its syntax is checked.

In addition, XML is not terribly robust. A single corrupted character can make an entire document unreadable to a parser. And, under certain circumstances, finding the error can prove to be tremendously frustrating.

Finally, there is the data itself. Native formats using data record layouts have much to recommend them: They don't need to be parsed, and the data does not need to be converted. In fact, if you can access files in native binary formats or in XML, the native format will almost always be easier, faster and more reliable. More reliable because errors within the data fields themselves do not affect your ability to read other fields.

The beauty and strength of XML are not inherent. Where XML shines is in the metadata that can be used in transformation engines. XSLT, XSL-FO and similar standards are making it possible to easily change the nature of documents automatically, and *that* is a compelling advantage.

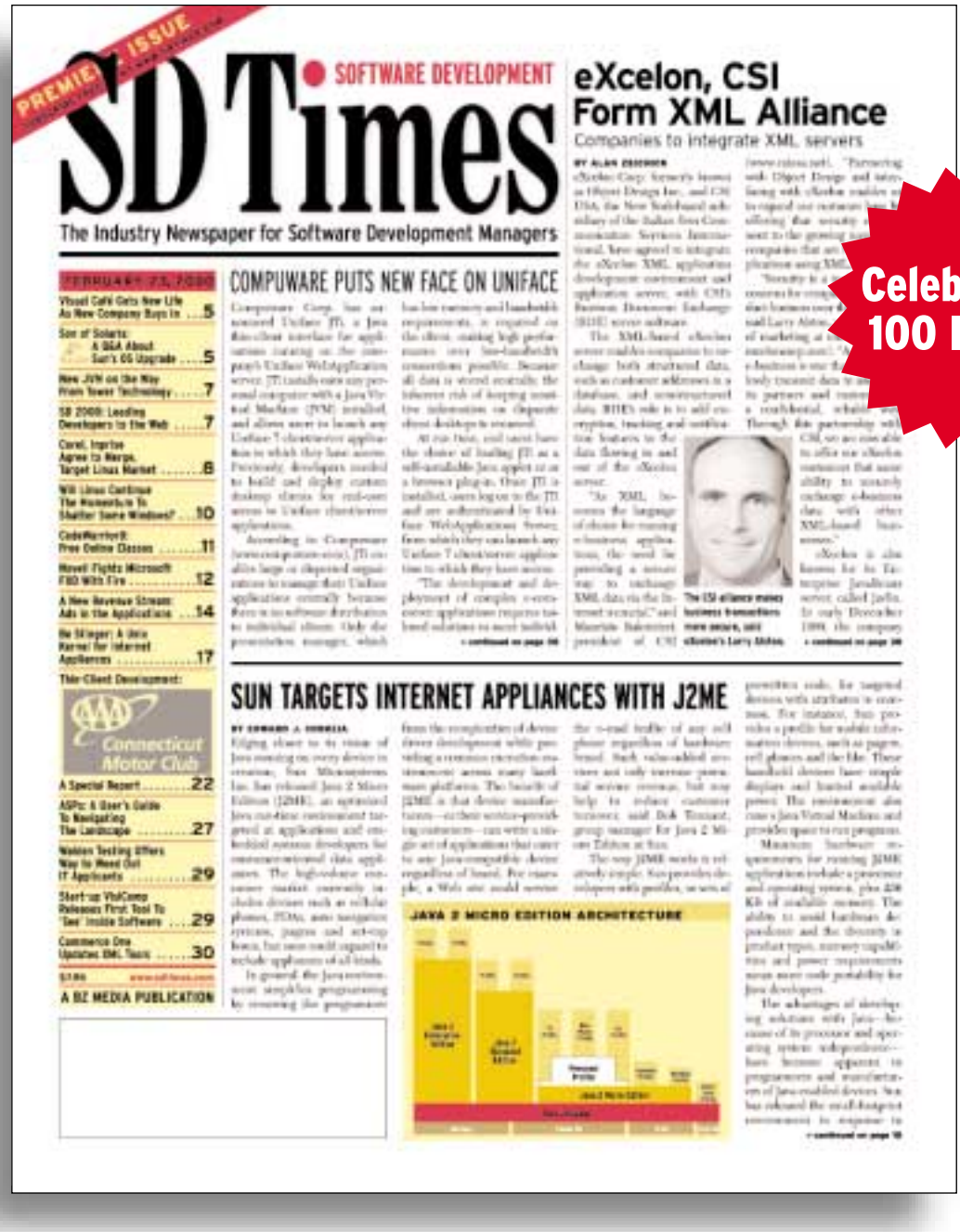
This is the key point: It's the fact that XML is agreed to and widely adopted by other tools that makes it powerful, not the notation itself. For this reason, XML is appealing in Web services (where interchange of disparate data is crucial) and of little interest to EDI users (who already have set up their interchange protocols).

As more XML databases become available, and SOA is deployed around the enterprise, there is likely to be a facile and uncontroversial decision made in many IT departments: Store all data in XML. As I have tried to show, this decision should not be automatic, but rather the product of careful thought.

Data that will be actively interchanged between systems and that lacks real-time processing requirements is a good candidate for XML; likewise data that benefits from transformations facilitated by XSLT. But even in these cases, the use of traditional data formats might still be preferable. In the event XML interfaces are later needed, native data can be exported in XML via simple-to-write conversion routines. The judicious use of XML will benefit most sites. The indiscriminate use, however, will prove cumbersome and costly. ▮

Andrew Binstock is the principal analyst at Pacific Data Works LLC.

CHANGING INDUSTRY


PREMIER ISSUE

SOFTWARE DEVELOPMENT

SD Times

The Industry Newspaper for Software Development Managers

FEBRUARY 15, 2000

Visual Café Gets New Life As New Company Buys In 5

Son of Solaris: A Q&A About Sun's OS Upgrade 5

New JVM on the Way From Tower Technology 7

SD 2000: Leading Developers to the Web 7

Corel, Inprise Agree to Merge, Target Linux Market 8

Will Linux Continue The Momentum To Shatter Some Windows? 10

CodeWarriorU: Free Online Classes 11

Novell Fights Microsoft FUD With Fire 12

A New Revenue Stream: Ads in the Application 14

No Stinger: A Java Kernel for Internet Appliances 17

Thin-Client Development:

Connecticut Motor Club

A Special Report 22

ASPs: A User's Guide To Navigating The Landscape 27

Walden Testing Offers Way to Weed Out IT Applicants 29

Start-up VisiComp Releases First Tool To 'See' Inside Software 29

Commerce One Updates XML Tools 30

$3.95 www.sdtimes.com

A BZ MEDIA PUBLICATION

COMPUWARE PUTS NEW FACE ON UNIFACE

eXcelon, CSI Form XML Alliance

Companies to integrate XML servers

BY ALAN ZEICHICK

SUN TARGETS INTERNET APPLIANCES WITH J2ME

BY EDWARD J. SOMOZA

JAVA 2 MICRO EDITION ARCHITECTURE

Celebrating 100 Issues

www.sdtimes.com

David Karp
Northeast/Central
516-922-5253
dkarp@bzmedia.com

Jonathan Sawyer
Southeast/Europe
603-924-4489
jsawyer@bzmedia.com

Julie Fountain
Southwest
831-476-1716
jfountain@bzmedia.com

Paula F. Miller
Northwest
925-831-3803
pmiller@bzmedia.com

SD Times
What's happening. What it means.

BPA INTERNATIONAL

JAVA WIRELESS MIDDLEWARE

Once a novelty, wireless technologies in the form of smartphones and PDAs have become commonplace. Short Message Services and camera phone services are advertised on TV every night. They're not just Generation Y tech toys, though. Businesses also are adopting wireless technologies to enable today's mobile work force—and underneath all this lies wireless middleware.

You can, of course, roll your own wireless middleware with Java 2 Micro Edition (J2ME), but you'd serve your company better by using Java-based wireless middleware instead.

The problem with building your own middleware is that, unlike desktops and servers, wireless devices run on an incredibly wide variety of architectures, operating systems, networking protocols and wireless standards. Wireless analysts, such as Jessica Figueras, senior analyst at Ovum Research, and The Yankee Group's Gene Signorini, tell me that IT departments have had little success in standardizing wireless devices.

You don't need them to tell you that, though. Just think about trying to program to such wireless protocols and communications standards as WiFi, Code Division Multiple Access (CDMA) and Time Division Multiple Access (TDMA); devices such as PDAs, smartphones and laptops; and architectures ranging from Pentium IVs to Motorola's mobile Dragonball chip to Cirrus Logic's ARM-9 mobile processor, and you'll realize the problem. Who needs this kind of trouble?

Fortunately, many middleware platforms already are built around Java, so Java developers can focus on writing applications instead of writing to native platforms.

JAVA WATCH

STEVEN J. VAUGHAN-NICHOLS

There are dozens of examples. For instance, Defywire Inc.'s Defywire Mobility Suite release 2.0 uses Java Management Extensions (JMX) to glue mobile applications to J2EE, CORBA or .NET-based back-office servers. Or look at IBM's WebSphere Everyplace Connection Manager, which uses a gateway design with portlets, which are miniature Web services applications based on JSR 168 to link XML, Compact HTML and voice-HTML formatted content from conventional EAI applications to mobile applications.

By now you probably see that there's a theme here. There are three basic kinds of wireless middleware: carrier programs, such as systems that track the physical location of a device; mobile programs, such as games or small, standalone business applications; and the real meat and potatoes for most businesses, programs that extend the reach of existing applications such as customer relationship management, sales force automation and inventory control.

These applications tend to use middleware that supports multiplatform software platforms like J2ME and Qualcomm's Binary Runtime Environment for Wireless (BREW) on the device and XML-based Web services. The name of the game is to bridge the gap between existing business applications and mobile clients by providing a common set of APIs.

So what should you look for in Java-based wireless middleware? First, it has to support your back-office servers, your wireless network and your devices.

You also should check to see if your enterprise database management system already has related wireless middleware. For instance, Sybase owns iAnywhere Solutions, a leading pure-play wireless middleware vendor. So if you're running Sybase, iAnywhere's wireless middleware is the first place you should look for your mobile apps.

You also should check to see what kind of security protocols the middleware supports. Native wireless security measures, such as WiFi's Wired Equivalent Privacy, are infamously insecure, and shouldn't be trusted.

If your workers are truly mobile, you should also look for middleware that can handle switching from one cell to another, or even one network to another, without hiccupping.

Thus, you want middleware that isolates applications from connectivity issues.

Synchronization or replication is usually the method used to deal with this. Synchronization, like IBM's MQ Everyplace, which stores the state of the transaction, is, to my way of thinking, the best way to keep mobile workers mobile.

Last, you need to check into your middleware provider's business history. Yankee Group's Signorini writes in a research report, "A glut of pure-play wireless middleware and software vendors emerged during the past decade (a majority within the past five years) to address the enterprise mobile computing market, including Broadbeam, Extended Systems, Aether Systems, and Everypath. Many similar firms have faded away because of a lack of differentiation or revenue problems."

You don't want to be a customer of a company that fades away right from under your initial deployment.

Speaking of fading away, this is my last Java Watch column. So let me wish you success with all your Java projects and bid you adieu. ▮

Steven J. Vaughan-Nichols is editor of Practical Technology (www.practical-tech.com) and has worked as a programmer for NASA and the Dept. of Defense.

dtSearch® Instantly Search Gigabytes of Text
Across a PC, Network, Intranet or Internet

Publish Large Document Collections to the Web or to CD/DVD

- over two dozen indexed, unindexed, fielded & full-text search options
- highlights hits in HTML, XML, & PDF while displaying embedded links, formatting & images
- converts other file types (word processor, database, spreadsheet, email, ZIP, Unicode, etc.) to HTML for display with highlighted hits

"The most powerful document search tool on the market" –Wired Magazine

"Intuitive and austere ... a superb search tool" –PC World

"Blindingly fast" –Computer Forensics: Incident Response Essentials

"A powerful arsenal of search tools" –The New York Times

dtSearch "covers all data sources ... powerful Web-based engines" –eWEEK

"Searches at blazing speeds" –Computer Reseller News Test Center

In the past two years, over half of the Fortune 15 purchased dtSearch developer or network licenses.

See www.dtsearch.com for:
- hundreds of developer case studies & reviews
- fully-functional evaluations

1-800-IT-FINDS
sales@dtsearch.com

The Smart Choice for Text Retrieval® since 1991

Want Peer Code Reviews Faster?

Software developers, like authors of novels, need editors to catch mistakes. Peer code review lowers bug counts, ensures maintainable code, and promotes teaching and sharing among developers.

Code Reviewer automates peer code review so developers spend their time reading source code instead of managing the process itself.

- Quickly package and deliver proposed changes
- Automate audit trails
- Enforce checklists
- Review code remotely
- Never miss a change
- Works with SourceSafe, Perforce, CVS, and other version control systems

Code Reviewer 2.0

From the makers of:
Code Reports
Code Metrics
Code Historian

SmartBear Software
http://code-reviewer.com
info@code-reviewer.com
877.501.5651

SD Times readers get 5% discount!
Coupon code: sd237

FRACTURED STANDARDS

INDUSTRY WATCH

DAVID RUBINSTEIN

I remember, in the days long before high definition and digital surround sound, watching Rocky and Bullwinkle cartoons with segments called "Fractured Fairy Tales," which took fable characters such as Rapunzel or Hansel and Gretel and put them in comic situations, with the classic narration of legendary character actor Edward Everett Horton tying it all together.

Occasionally, my parents would come into the room to watch the show with me, but after only a few minutes, they would get up and leave, baffled at how someone could take a literary classic and skewer it in that way.

I, on the other hand, much preferred the comic tales to the originals, having at the ripe age of 10 come to understand that fairy tales are, well, for babies. They were fine for the little ones—in fact, today, my young children still enjoy hearing about Jack and the Giant and all the rest. But I needed something more, something a little different, than the storybooks could provide.

I bring this up because it's a nice memory for me, but also because we're hearing a lot of talk that enterprise development teams need something more, something a little different, than the old existing industry standards can provide.

Did fracturing those fairy tales make cartoon producer Jay Ward a bad person? No. The fairy tales remain, and parents continue to read them to their youngsters time and again. Does fracturing software make those responsible for it in any way evil? No. The standards remain for developers to write against and use as a basis for interoperability and compatibility.

Look at Java, and Linux, and now, perhaps, the Unified Modeling Language. All have a common base to them, yet software tools and platform providers are building, or have said they will build, proprietary features above the standard.

When people hear of fracturing standards, immediately they warn, "Look what happened to Unix!" They claim that those who can't learn from history are doomed to repeat it.

However, there is a difference. In the above cases, a standard was able to emerge before the splintering; with Unix, there already were multiple versions before a standard could be agreed upon.

Also, coding connectors to get Unix variants to work together was a pain…much in the same way that my cartoon-watching days were made more difficult by my having to get up and walk over to the television set to change the channel, and then play with the rabbit-ear antennas to improve the signal.

Today, we have remote control and cable; the software industry has Web services and service-oriented architectures to help overcome the interoperability issues.

In the Java realm, IBM and BEA insist that demand from their customers has driven them to add features above and beyond what Sun's JCP has defined as the Java 2 specification.

In the Linux world, Novell has announced it will add its proprietary NetWare kernel into an Open Enterprise Server, where it will share space with the Linux kernel. How long before the proprietary Novell features turn up in a new version of Linux from Novell? Not long, is our guess. Yet the base-level industry standards remain; for people who need an IBM system to work with a BEA system, applications can be written that don't require any of the proprietary features of either.

And now, UML. When IBM acquired Rational, and then Borland acquired TogetherSoft, two of the leading independent modeling companies suddenly were gone. You don't hear much about Rose anymore, as IBM instead touts the XDE tools. Together Control Center seemingly has become a mere add-in to Borland's IDE suites.

Take the Model Driven Architecture. Several modeling vendors already have positioned themselves as leading vendors of MDA tools, even though common specifications aren't even finished yet, and we haven't heard of any enterprise companies implementing it as yet. These tools probably won't take off until more transformation patterns that enable platform-independent models to become platform-specific models are validated.

Meanwhile, Microsoft has made noises that it, too, will include a modeler more robust than Visio in its Visual Studio IDE at some future date. Work has barely begun, and already Microsoft has created notations that are not part of the UML specification. But models can be written to the UML standard for importing into any tool that supports the standard.

As long as interoperability can be assured, there is no reason for our industry to fear the splintering of technology as it did during the height of the Unix variations.

As President Franklin Delano Roosevelt might have said (if recreated by Mr. Ward): "There is nothing to fear but fear itself…and the complete destruction of the world as we know it." ▮

David Rubinstein is editor of SD Times.

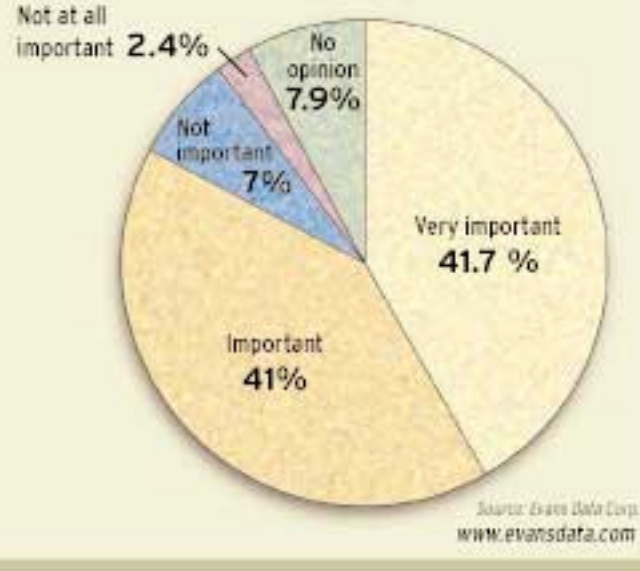
Should Linux Be Standardized Beyond the Kernel?

DATA WATCH

Most would likely agree that the controls inherent in the way the Linux kernel is developed and maintained are adequate to protect it from splintering. But what about areas beyond the kernel?

Almost since the inception of Linux, efforts to standardize it have emerged, including the Consumer Electronics Linux Forum (CELF), the Embedded Linux Consortium (ELC), the Freestandards.org's Linux Standard Base (LSB), and the Open Source Development Labs (OSDL). While results of those efforts have been mixed, one thing is clear: The vast majority of developers agree on the need to standardize.

Of the 542 respondents of Evans Data Corp.'s Linux Development Survey 2004, more than 80 percent believe that Linux standardization beyond the kernel is either important or very important, while fewer than 10 percent believe the opposite.



BUSINESS BRIEFS

Revenue for electronic design automation (EDA) companies for the fourth quarter of 2003 was US$1.021 billion, an increase of 13 percent from the same quarter in 2002, the first double-digit growth since Q1 2001, and the first time in two years that the industry topped $1 billion, according to the **EDA Consortium**, which tracks the industry. Total revenue for 2003 was $3.8 billion, an increase of 3 percent from 2002, the group also said . . . Another group of companies reporting revenues together were **MySQL AB**, **Sleepycat Software Inc.** and **Trolltech AS**, which together claim their dual-licensing models have seen 65 percent average revenue growth in 2003, but provided no specific revenue figures . . . Data management and integration vendor **Versant Corp.** posted revenue of US$6.4 million for fiscal Q1 ended Jan. 31, 2004, with a net profit of $605,000, or 3 cents per diluted share, an increase of 9 percent from the same quarter a year ago . . . Integration and development tools vendor **Magic Software Enterprises** reported revenues of US$17.3 million for the fourth calendar quarter of 2003, a 26 percent jump from a year earlier and a 10 percent increase from Q3 2003. Net profits rose to $1.23 million for the quarter, an increase of 51 percent from the previous quarter and up from a loss of $3.29 million in same period in 2002. ▮

CALENDAR OF EVENTS

Visual Studio Connections/Microsoft ASP.NET Connections — April 18–21
Orlando, Fla.
DEVCONNECTIONS INC.
www.vsconnections.com/vs

Linux on Wall Street — April 28
New York
LIGHTHOUSE PARTNERS INC. & FLAGG MANAGEMENT INC.
www.linuxonwallstreet.com

TheServerSide Java Symposium — May 6–8
Las Vegas
THESERVERSIDE.COM
www.theserverside.com/symposium

IDUG 2004 — May 9–13
Orlando, Fla.
INTERNATIONAL DB2 USERS GROUP
conferences.idug.org/namerica/2004

Gartner Application Integration & Web Services Summit — May 17–19
Los Angeles
GARTNER INC.
www4.gartner.com/2_events/conferences/apn12.jsp

Microsoft Tech-Ed — May 23–28
San Diego
MICROSOFT CORP.
www.microsoft.com/seminar/teched2004

BEA eWorld — May 24–27
San Francisco
BEA SYSTEMS INC.
www.bea.com/eworld

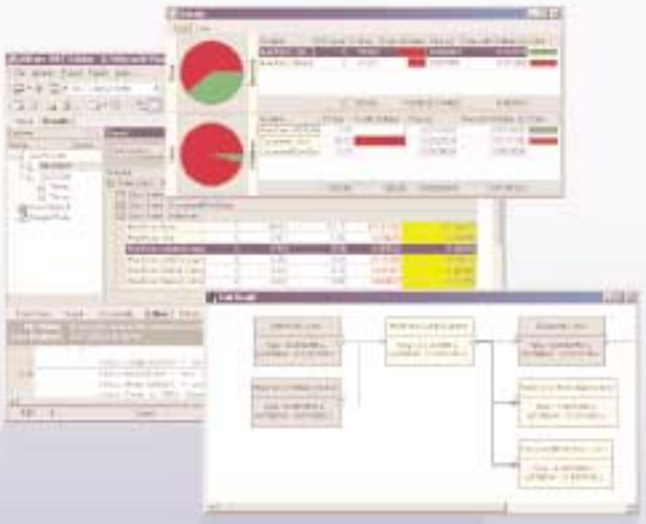
For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

Software Development Times (ISSN #1528-1965, USPS #001-9625) is published 24 times a year by BZ Media LLC, 2 East Main Street, Oyster Bay, NY 11771. Periodicals postage paid at Oyster Bay, NY and additional offices. POSTMASTER: Send address changes to SD Times, 2 East Main Street, Oyster Bay, NY 11771. SD Times is a registered trademark of BZ Media LLC.

MANAGE • DEBUG • TEST • DELIVER!

AutomatedQA's affordable and feature-rich application testing, profiling, debugging and project management tools have been engineered from the ground up to deliver robust and unparalleled support for Windows® applications and are one of the first products of their kind with full .NET Framework support out of the box. Once you start using our tools, you are well on your way to building rock solid applications, in the shortest possible time, **guaranteed!**



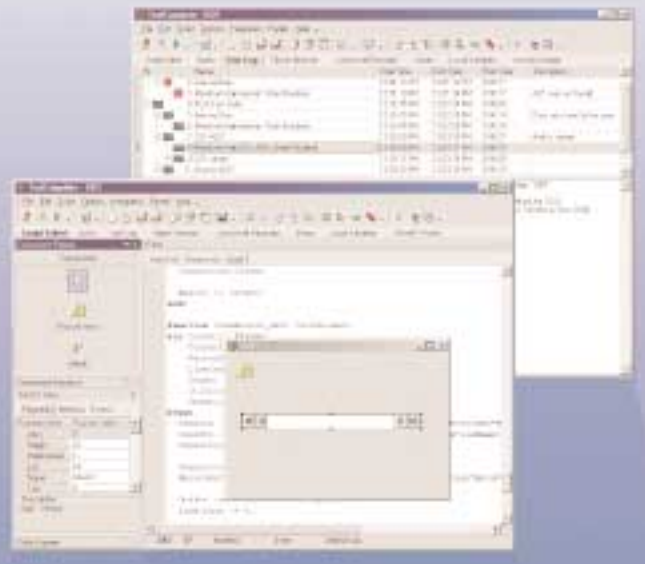
Got Bottlenecks? Want to Improve the Performance of Your Applications?

AQtime is a complete industrial grade profiler/debugger – engineered to help you discover application bottlenecks, memory leaks, resource-hogging code, and untested algorithms in your software projects – BOTH ON THE CLIENT AND SERVER SIDE! AQtime is a total solution for professional Windows® developers that want to eliminate guesswork during development and deliver rock solid programs when the project is complete. Via its unrivaled reporting and test result analysis architecture, AQtime doesn't just tell you that there are bugs and bottlenecks in your project – It shows you which module, class, routine or line of code is causing the problem so you can go to work and quickly eliminate it!

With TestComplete, Your Applications Can Work as Expected, Each and Every Time!

TestComplete is AutomatedQA's complete application testing system offering automated functional, unit, and regression testing in one easy to use and totally integrated package. TestComplete brings testing out of the Dark Ages by offering an affordable way in which to deliver rock-solid and predictable applications – on time... each and every time!

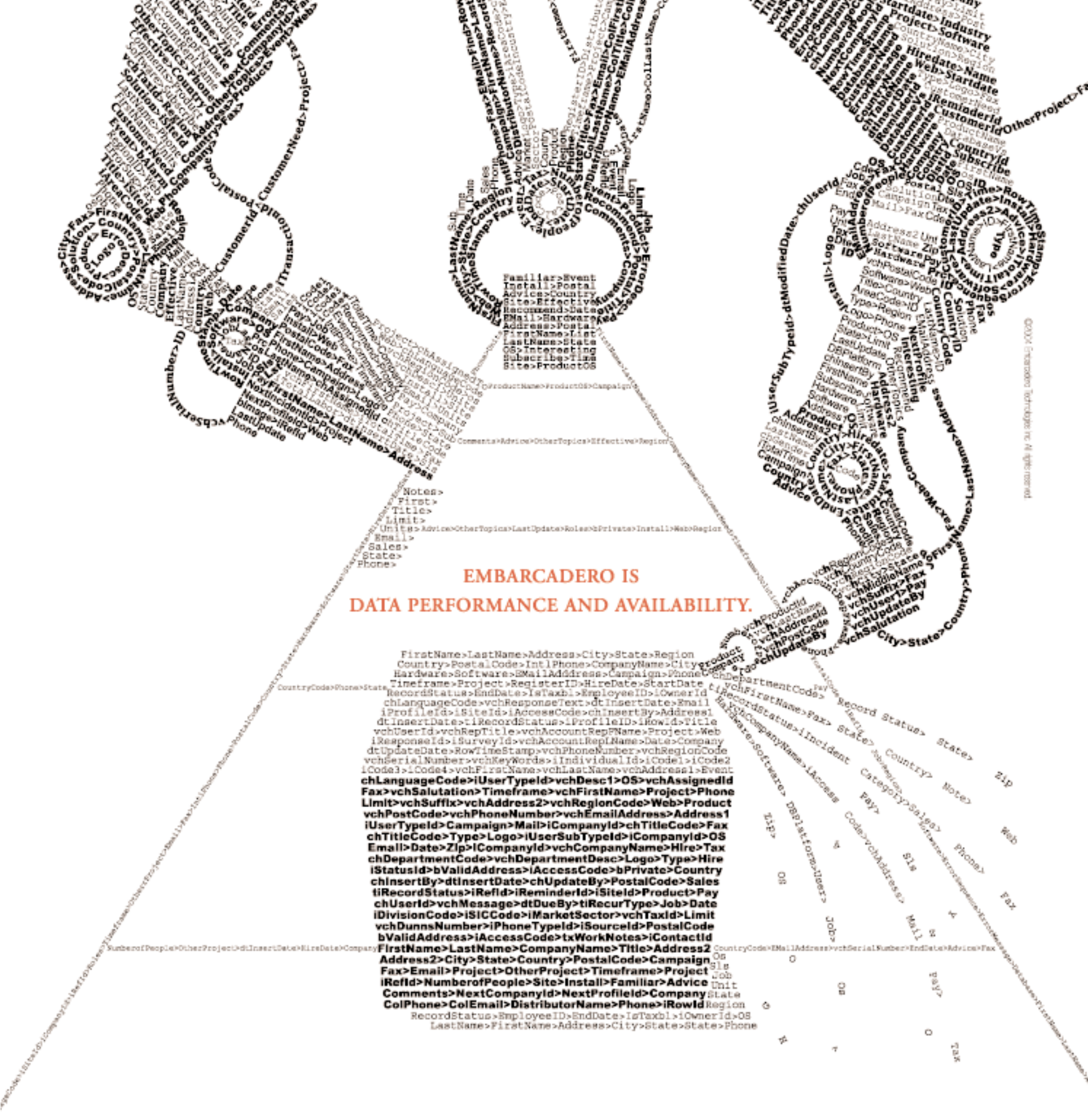
Whether you build Windows® or Web applications, once you start using TestComplete, you'll be able to turn every test run into a key contribution to your overall development efforts. TestComplete will keep your projects on schedule and on spec, the team confident, and the work 100% productive.



AutomatedQA Corp
2200 E. Patrick Lane Suite 1
Las Vegas NV 89119
Tel: (702) 891-9424

To learn more about AQtime, TestComplete and our complete range of Quality Assurance tools, please visit us online at: www.automatedqa.com

Microsoft, Windows and Visual Studio .NET are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.



● You've just gone live with a new mission-critical application. Everything went well. The big system integrator left their invoice. But suddenly it's all come to a grinding halt. Dollars evaporate while anxious colleagues and bosses wait for you to troubleshoot the problem, then test the system you've brought back to life. This could have been avoided. With Embarcadero's Performance Center and Extreme Test, you can proactively optimize your databases and verify application availability and performance, ensuring system uptime and reducing costs. To learn more, visit www.embarcadero.com/performance/.

EMBARCADERO
TECHNOLOGIES.
we make data work™